THE AUTOMOBILE

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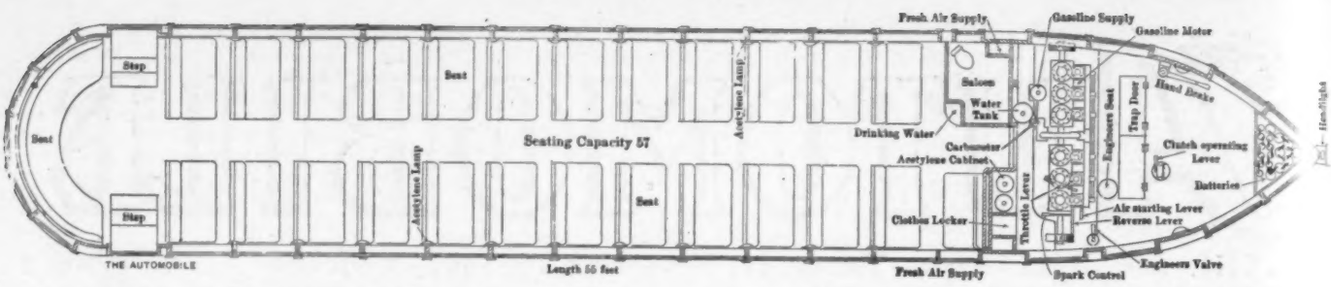
UNION PACIFIC AUTOMOBILE COACHES.

OMAHA, Neb., Nov. 7.—In deciding to equip its road with gasoline motor cars for suburban and branch line service, the Union Pacific Railroad Company has taken the initiative in a course which, it is predicted, many other railroads in the country will follow. The success which has attended the operation of the first car turned out has caused the company to construct several new cars and combination mail, baggage and express trailers. Of the improved automobile coaches, the first has been completed and is known as motor car "No. 2." This car is very similar in design to the original car No. 1, but it is larger and the body is built of steel instead of wood. The accompanying photographs show the exterior of the car, the interior of the motor compartment and the passenger space. The interior finish is in antique mahogany, the ceiling being cream white with decorations in gold and sepia. The seats are finished in leather.

DRIVER'S POSITION IN THE MACHINERY COMPARTMENT OF THE IMPROVED AUTOMOBILE RAILROAD COACH OF THE UNION PACIFIC.

The car is 55 feet in length with a seating capacity of fifty-seven. It has two four-wheel, all-steel trucks. With its steel sills and bracing, the steel carlins and ribs and the angle bracing and outside steel shell, the car is of remarkable strength. The total weight is but 56,000 pounds. The driving wheels are 42 inches in diameter; the trailing wheels 34 inches. The hot water circulation coils serve the double purpose of cooling the engine and heating the interior. Twenty-five opalescent panel lights, burning acetylene gas, provide the illumination.

The car is driven by a 100 horsepower six-cylinder gasoline engine, designed to



ACCOMMODATION PLAN OF AUTOMOBILE COACH NO. 2 BUILT BY THE UNION PACIFIC RAILROAD COMPANY AT THE OMAHA SHOPS.

meet regular railroad car service requirements. It has a "make-and-break" ignition system, with primary battery to start on, and a magneto for regular running service.

The metal clutch operated by hand levers, which proved so successful on No. 1, was applied to No. 2, but is operated by air pressure, controlled by a specially designed valve. This car has attained a higher speed than 63 miles an hour, and has climbed a hill with a grade of 42 feet to the mile at the rate of 32.5 miles an hour.

Motor car No. 1 has been in regular service since August 21, between Kearney and Calloway, Neb., a distance of 65 miles, making one round trip daily. It has required but slight running repairs and has not been out of commission at any time. It is a four-wheel car with single trucks, designed for light branch and interurban passenger service, and has seating capacity for twenty-five persons. The car body is 31 feet in length, mounted on wheels, 42 inches in diameter. The weight is a trifle over twenty tons.

The car as built is very strong, affording great safety to passengers in case of accidents or wrecks, as the longitudinal stiffness of the car almost entirely precludes the possibility of telescoping.

The lines of design of the car body are not unlike an inverted boat, the front end of the car being tapered off into a sharp point and the roof rounded off from the top, presenting no flat surface to the resistance of the air. The rear of the car is also rounded off, avoiding the "vacuum" produced by square end cars. The wind resistance is thus reduced to a minimum.

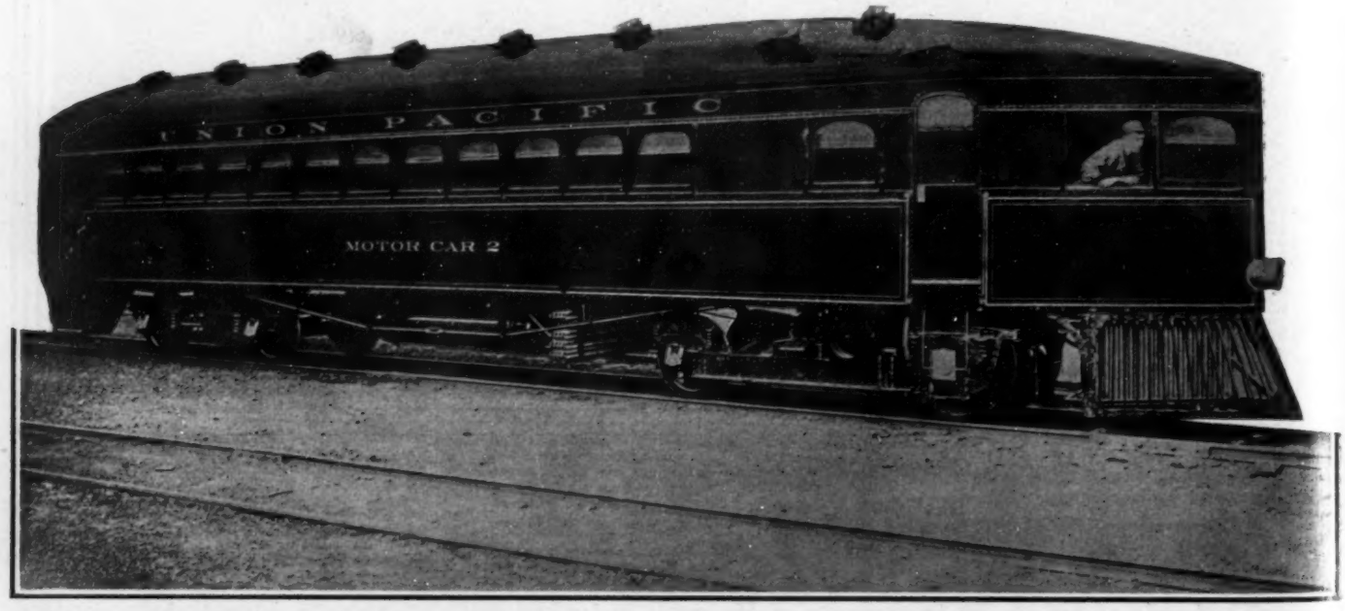
The upper deck and old style ventilators have been done away with, and adequate ventilation is secured by means of roof ventilators which exhaust by suction the air from inside the car, fresh air being taken in from the front of the car roof. A complete change of air can be obtained every four minutes if desired. The stuffy atmospheric condition so often encountered in electric and other transportation cars is entirely avoided. The floor has been made entirely watertight and can be easily and thoroughly cleaned by flushing with hot water.

The water from the cylinder jackets of the motor is piped around the sides of the car, so that in cold weather the heat is radiated to the interior. In warm weather this water is piped to coils immediately below the floor. These two systems of coils afford a perfect system of regulating the temperature inside the car. Acetylene gas lighting is used, giving a powerful light from the headlight. The lamps inside the car are provided with opalescent panels, producing a soft illumination.

The car is equipped with air brakes on the direct system, with braking power on all four wheels. Attached to the motor crankshaft is an air pump which maintains 100 pounds air pressure in two reservoirs with a capacity of thirteen cubic feet. Numerous tests at a speed of twenty miles an hour have shown that the car stops in 112 to 115 feet without inconvenience to the passengers. Air is used, also, for starting the engine. In addition to the air brake the car is equipped with a rachet lever hand brake.

Motive power is furnished by a six-cylinder "Standard" gasoline engine of 100 horse power. The cylinders are 8 inches by 10 inches, of the upright type, placed at right angles to the centre line of the car. The six cylinders are connected up in opposite sets of three cylinders, resulting in three power strokes at each revolution of the crankshaft. Engine speed has a wide range of control, giving great economy under variation of load.

The throttle and spark levers are all conveniently located and in easy reach of the operator. Immediately in front of him is



EXTERIOR OF THE UNION PACIFIC RAILROAD COACH NO. 2.—NOTE POINTED FOREBODY AND FRONT DRIVING TRUCK.

the air brake valve lever and the emergency ignition cut-out, which enables the operator to stop the engine and apply full brake power instantaneously. The sparking current is furnished by storage battery, with a make-and-break spark device. The clutches and controlling devices are all mechanical and of the simplest design. The drive is direct by chain to the driving axle.

The car is intended for service on 4 per cent. grades with frequent stops, and is therefore at present geared to a maximum speed of about thirty-five miles an hour, but with slight change could be easily speeded to sixty miles. The acceleration of the car from a standstill to maximum speed is superior to any electric car of the same horsepower. The rate of acceleration of the car for the first fifty feet is much slower than the electric car, there being no uncomfortable jerk in starting. From 100 feet on, however, the rate of acceleration is very rapid.

On a stretch of one-half per cent. grade the car starts readily on high speed, direct connected, without the use of gears, but on anything over one-half per cent. grade, or with a heavy trailer, it is necessary to use the change speed gear. The car is easily controlled by one operator and can be stopped and backed up at will, although designed to run in regular service in one direction. The vibration and noise of engine have been almost entirely eliminated and when in motion neither can be distinguished.

Before being tested in actual service, car No. 1 was operated and thoroughly broken in and around the Omaha railroad shops and vicinity. During these tests it was coupled to two passenger cars, a standard mail car weighing 52,100 pounds and a standard coach weighing 60,000 pounds. These cars were successfully started and accelerated both on a descending grade and on a one-third per cent. ascending grade, the motor thus starting a load of 152,100 pounds. Pulling a standard mail car weighing 52,100 pounds, a trip was made to South Omaha and return, up a 1.6 grade, at the rate of 11 miles an hour. In another test the motor car successfully ascended a sharp grade of 7.8 per cent., or about 400 feet to the mile, the car being stopped and started repeatedly on the grade. After a number of special trips in the vicinity of Omaha, the car furnished its own power all the way on a trip to Portland, Ore.

GENERAL INTERIOR VIEW OF UNION PACIFIC AUTO COACH, SHOWING PASSENGER SEATS AND ACETYLENE LAMPS ABOVE THE WINDOWS.

British Auto Industry.

Some interesting facts and figures on the British automobile industry are given in a recent article in the authoritative London *Times*, from which the following excerpts are republished for the information especially of the American manufacturer:

"A study of the figures relating to the industry shows that the principal works and factories of this country have during the past season had their capacities taxed to the utmost; their output has been immense; the prices they have realized handsome, and yet they have not been able to fill the demands of the consumer.

"After careful inquiries in the seats of the industry, we may estimate the production during this year up to the end of September at nearly 13,200 cars of all grades and sizes, together with some 15,000 motorcycles. These are large figures, and their significance cannot at once be realized. Taking the average selling price at the works as $1,000 per car and $150 per cycle, this means that during nine months the turnover of the works has been $13,200,000 in cars and $2,250,000 in cycles, together over $15,000,000. The total trade, taking middlemen's profits into consideration, must be well over $20,000,000, and this has been achieved in an industry which has yet to see its first decade.

"The French automobile press has described Great Britain as a much more valuable market for their manufactures than the French market itself. During the first nine months of 1905 there were imported 4,761 motor cars, valued at $10,323,250, and 1,395 motorcycles, valued at $228,600—that is to say, Great Britain has only been able to make some 70 per cent. of its requirements. In addition there were imported $3,250,775 worth of parts of motor cars and cycles, so that the total import trade has reached the large amount of $13,802,625, showing that altogether over $33,750,000 worth of motor cars and cycles has changed hands in the British market during these few months.

"The average price of the imported car was $1,900 in 1904 and $2,165 in 1905. The great advance is in the quality of the product. The British output is largely made up of the smaller and cheaper cars, and it is doubtful whether the corresponding figures on the same basis would show an average retail selling price of more than $1,250 to $1,500. This means that the foreigner has secured the cream of the trade. Of course many cars worth double and treble this average are British made throughout, but the car for the man of moderate means has been the pet of British makers, and the great number turned out must infallibly bring down the average realized price. The 'light car,' as it is termed, has not had so much attention paid to it on the Continent, makers' efforts having been concentrated on the larger and more profitable sizes, and it is practically certain that if it were not for the American small-car imports the average import car value would be even much larger than it now stands. The trade is expanding, and seems at the moment to justify the prophecy that it will continue to expand."

In considering the foregoing it should be borne in mind that there is no import duty on complete machines or parts in the British Isles.

Mr. Edge tells a pleasant little story of ingenuity which has reached him in a letter from Mr. Allison, who has been touring with a Napier car in Basutoland, the first car that has been there. The drifts ascending from some of the rivers were so steep in places that the car was tilted until the gasoline tank was lower than the carbureter, and, of course, the car stopped for want of fuel. Mr. Allison made a small tank for gasoline to clip on to the dashboard, and put a "T" joint with two taps into the feed pipe, so that when he comes to very steep places he puts on his little tank, connects it to the feed pipe with india rubber tubing, and goes gayly on. He measured one of the drifts to have a rise of three feet in five, so that until we take to driving cars up the sides of houses we shall not need to be so ingenious. —Dundee *Advertiser*.

Representatives of the German, Bavarian and Austrian Automobile Clubs met in Berlin at the end of October to discuss the next Herkomer Tour, which is to be held in June and will include Austrian roads as well as a run through Bavaria.

FASHIONS IN CLOSED AUTO BODIES.

WORK is going forward with a rush in several of the carriage and auto body building shops of New York at the present time on bodies for new cars that are to be exhibited at the automobile shows in January. There are in the city two shops devoted solely to the building of auto bodies and half a dozen coach-making companies that have taken up the work, some on their own initiative, but most of them reluctantly to satisfy their best customers in fine carriages whose demands forced the old conservative houses into the new, and, as it is proving, very profitable line.

The body-building business in New York may be divided into two classes of work—building for the trade in quantity and building special bodies for individual owners. The second class greatly predominates, as the large coach-building companies do no building for the trade; nearly all of that branch of the work is carried on in other parts of the country, principally in the Middle West, where the factories are close to the supplies of ash, oak and white wood. All of the metropolitan shops build bodies to special order to fit chassis brought to them by their customers. Such customers nearly always have ideas of their own which they want incorporated in the finished product, so that they will have exclusive designs possessing something unique in style or fittings. As most such orders are placed by persons of wealth and prominence, such as the Vanderbilts, Goulds, Goelets, Mackays, Billings, Gates, Harriman, Black and others, it is natural that most of the bodies are built to fit the most expensive foreign chassis, such as the Panhard, Mercedes, Renault, Bollée and Fiat. In many cases these are new chassis, imported, as is the custom, without the body; but in the fall season many cars that have been used with open phaeton body during the summer are brought to the shops to have closed bodies fitted for town use through the winter.

A few cars of 1904 model, designed with short wheelbase to take rear entrance tonneau bodies, are brought to the body makers to have winter bodies fitted, and in such cases it becomes necessary to lengthen the chassis, in order to provide for the ample side doors required. There are two ways of doing this; one is to forge new spring horns of increased length to replace the old spring hangers riveted to the ends of the side frame members, moving the axles further apart and increasing the length of the side chains, and the other is to cut the side frames at the middle, insert new pressed steel sections to lengthen them from fourteen to twenty inches and put in a new and longer driving shaft from clutch to gear-box or from gear-box to countershaft, leaving spring hangers, axles and side chains unaltered.

Just now the season for building closed bodies for winter use is drawing to an end, and a little later work will begin on the lighter open bodies for touring purposes. The time required for the proper building of a first-class closed body ranges from six weeks to three months, and customers, of course, want their cars for winter use before the first of the new year. Much work, however, is being finished on bodies that will be seen on 1906 cars exhibited at the January shows. These include all styles, as exhibitors wish to present a full line, embracing closed and open bodies and special semi-racing or cross-country bodies.

Two styles of closed bodies will predominate this winter almost to the exclusion of all others. These are the landaulet and the limousine. The limousine is favored because of its roominess and the perfect protection it affords against cold, wind, rain and snow. The landaulet commends itself because of its luxuriousness, and the fact that in mild, pleasant weather the top can be folded back, making an open car. The landaulet is a little less cumbersome than the limousine and is a closer approach to the carriage type. The tendency is to get auto bodies nearer and nearer to the accepted styles in horse-drawn vehicles, and better taste now prevails in the matter of colors, the brilliant, gaudily-striped finish of two or three years ago having been succeeded by rich, dark, quiet maroon, royal blue and green, with narrow striping usually in lighter shades of the same colors. The wheels have the same color scheme as the body, and the upholstering is either in leather and cloth of the same color or the leather black and the cloth of the same color as the exterior paint of the body.

While several Renault cars of 10 horsepower have recently been brought to the builders to have winter bodies for town use fitted to the chassis, nearly all of the bodies turned out this fall or now under construction are for high-powered cars, in several instances as high as 50 and 60 horsepower in the foreign cars, but more commonly for powers ranging from 35 to 45 horsepower.

There is a notable difference in methods and materials in use in the different shops, the old-established carriage houses using white wood as much as possible for the panels, while the shops that make a specialty of auto body building employ sheet aluminum almost exclusively for this purpose. The chief advantage possessed by the metal is its ductility, which permits it to be curved and beaten to any desired curve or swell. Curves in directions at angles to one another are easy to obtain in aluminum, but are impossible in wood. Sharp curves also are preferably made in metal, as wood cracks and checks when bent too much.

Of four landaulet bodies, built after the same design (Fig. 1), that were in various stages of completion in the shop of Locke & Company, on Eighty-fourth street, New York, last week, one is to be finished in royal blue, another in maroon and a third in dark green. The framing of all is of ash, which is especially suitable for the purpose because of its flexibility and toughness. Each piece of framing is shaped from a single piece of timber, sawed to the required curves and rabbetted, beveled, dovetailed and recessed to fit together, to receive the glazing, the hinges and the upholstering. The panels, of white wood bent to shape, fit snugly against shoulders left on the framing and the hinges are sunk in sockets, where they are concealed from view, except the door hinges, which necessarily protrude.

English long-grained leather, proof against rain, is used for the folding top, which folds back on two bows hinged in the angle just back of the middle of the door and extending to the upper right corner of the top and to a point farther to the left. The dividing line across the top is above the doors. The extension top covering the driver's seat is removable, the stanchions at the front being socketed in brackets on the dash. The window of the door drops down entirely out of sight within the lower half of the door, and the framing for the upper half of the door to the right is hinged to fold backward with the top and lie flat on the side of the car body. The frame for the upper front half of the door is similarly hinged to fold inward and lie flat on the body just back of the driver's seat.

Thus is provided a very luxurious open car for pleasant weather, excellently suited for town use in fall, winter and spring. The tendency is to make the front seat with a low back after the style of footmen's seats in horse vehicles. Just behind the driver's seat is a large, bevel-glass window that lets down out of sight in a recess in the back of the front seat. The rear seat is wide enough to accommodate three passengers, if necessary, and, in addition, there are two individual seats attached with stop hinges to the cross portion of the body back of the front seat. These, of course, are *tête-à-tête* with the rear seat and fold up out of the way when not occupied. Under the rear seat is a compartment for tools, spares and similar articles, that opens from the outside rear of the car.

French morocco leather of the softest and most pliable nature and the finest grain is

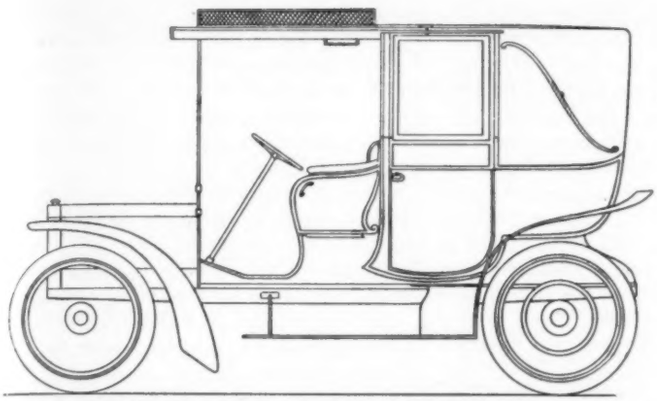


FIG. 1.—LANDAULET BODY BY LOCKE & COMPANY—Top Folds Down, Making an Open Vehicle in Fair Weather.

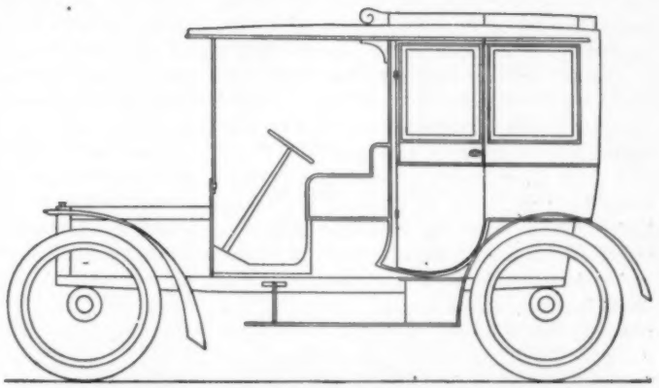


FIG. 2.—EXTENSION FRONT COUPE BY LOCKE & COMPANY—Top Is Permanent, b t All Windows Drop Down Out of Sight.

used for upholstering the cushions and seat backs. This leather is tufted with its underlying layers of curled hair and other material upon boards and sewed together, after which it is tacked into place on the seat back or cushion.

Woolfing cloth—a kind of broadcloth—is used for the interior lining, a light weight being employed for the folding top and a heavier weight for the sides of the body where there is more wear. Both in the cloth and leather the color is of the same shade as the exterior finish of the car.

Auto leather is used as covering for the front seat, as it is painted and will stand the weather and severe service, whereas the morocco is very absorbent of moisture and is more easily torn.

Elaborate interior furnishings are discountenanced by the builders as being unnecessary in a car for town use, and there is no attempt to provide storage space, as in touring cars. Small pockets for card cases, a dressing case and a watch case are provided in the upholstering, but these are made as small and inconspicuous as possible, the main purpose being to provide as much room as possible for the passengers and to have nothing in their way.

The doors of these Locke landaulets are made of generous width, measuring 22 and 23 inches in the clear. Some are made 24 inches wide.

The cost of a landaulet body like the foregoing ranges from $1,450 to $2,500. Some special bodies recently built have cost $2,700, $2,800 and even $3,000, but they had special furnishings, interior electric light clusters and more than ordinarily superior finish. The cost of a limousine body is just about the same as that of a landaulet, the material and workmanship in all cases being the best possible.

Fig. 2 shows a special coupé body with permanent top extended to reach forward beyond the line of the dash. This is more freely glazed than the landaulet body, since there is no folding top to prevent the insertion of windows in the rear portion. It will be noticed that a peculiarity of this design is the hinging of the door to swing toward the front. All windows let down, within the sides of the body, making the vehicle quite open.

Between the limousine, with its permanent extension roof, curved corners and stationary window framing, and the landaulet with its folding top and removable extension, there is a body design called the "limousine landaulet," which possesses features of both styles. The rear portion of the top, from a point above the smaller side window, folds back and down, as the top of a landaulet does, but the door and window framing is stationary and the extension top with its stanchions is intended to remain in place. The effect in pleasant weather is that of a semi-open carriage. Such a body is especially adapted for a chassis with very long wheelbase, and is usually made roomy enough to carry five persons inside in the greatest comfort—three on the wide rear seat and two on individual folding seats hinged to the front. In a pinch two more can be crowded in on camp stools.

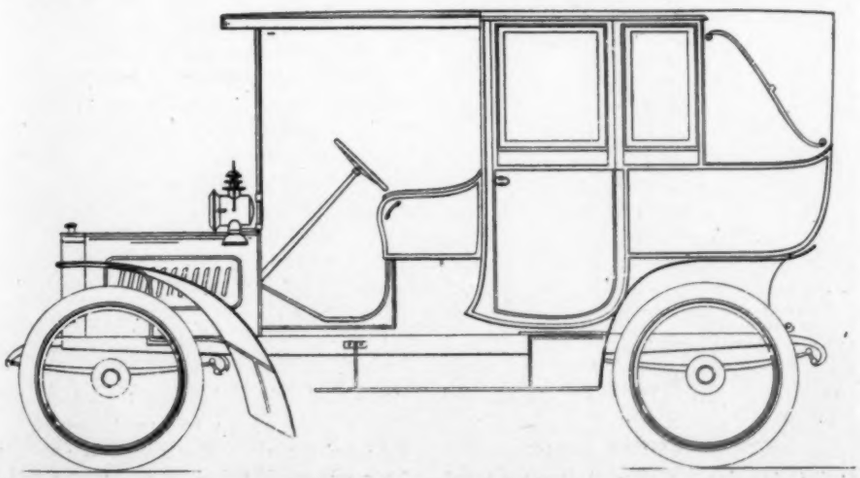


FIG. 3.—LANDAULET-LIMOUSINE BODY BY LOCKE & COMPANY—Rear Part of Top Folds Back, but Door and Window Frames Are Permanent, Making Semi-open Vehicle.

The popularity of the limousine, which was much in vogue in New York last winter, continues undiminished. Nearly all the work that is being done on closed bodies at the present time by Cole & Woop, on Sixty-seventh street, New York, is in bodies of this style, although work is being pushed energetically on many touring bodies for show cars. While there is nothing radically new in general form in the limousine, there is a harmonizing of lines and an avoidance of obtrusive curves and angles that make for better taste—a tendency that is strengthened by the use of quiet colors in finish and upholstering. There are, however, a number of new ideas in interior finish and furnishing. Notably, two limousine bodies in the framing department of this shop last week were being finished, one in bird's-eye maple and one in mahogany, in the natural wood, varnished above the seats. There is to be no upholstery above the bottoms of the windows. The tops are roofed from rear end to front end with a single sheet of veneer, full width, screwed down to cross pieces of maple or mahogany to correpond with the veneer, and the paneling between the windows is veneered in the same wood, all finished in the natural wood.

There is avoidance of cloth for interior lining also in a limousine which Locke & Company are lining all through with leather. It is explained that the leather or the varnished wood will not collect as much dust as the cloth and that any dust that does stick to it can easily be wiped off with a soft cloth. The wood, moreover, does not become damp and sag down in wet weather, and of course never becomes musty.

Another idea introduced in the new limousines is the use of pivoted seats to supplement the wide rear seat. The extra seats are pivoted one on either side just back of the side doors and can be swung to face in

any direction. When not in use the backs and seats can be folded up out of the way against the side of the body. One of these limousines is being built for Musical Director Comeil, of the Metropolitan Opera House. Prices demanded for a body of this style range from $2,000 to $2,500.

A good many double phaeton bodies with extension tops closed at the back are being built. These have the half-door side entrance and stationary top, with curved panels and a large window at the rear reaching from the back of the seat to the top. This prevents the entrance of dust from behind the car. In fair weather the sides are entirely open, but in foul weather storm curtains can be buttoned into place all along both sides, to protect not only the passengers in the rear seat but the operator and other occupant of the front seat as well.

Yet another style of body coming into vogue is the large double phaeton with victoria top. One of the handsomest of these was just completed last week by A. T. Demarest & Company, of Fifth avenue, New York, for a huge 50-horsepower Panhard recently imported by one of their customers. So powerful an engine, it was held, would drive a car at a speed that would rack a heavy limousine or landaulet body very badly. When raised, the folding victoria top extends well forward and down in front, giving a large degree of protection to the occupants of the rear seat. (See special design for a similar body by Cole & Woop, Fig. 4.) The wheelbase of the car is 120 inches, allowing ample room for a generously wide door and full, sweeping lines. The body is painted a bright automobile red, and the upholstering is in red leather, while the top is of heavy black leather.

Besides the foregoing regular styles of bodies, there are a large number of special tor Conreid, of the Metropolitan Opera many cases to adapt a closed body or an open side-entrance body to a chassis with short wheelbase. Interesting examples of this are two Cole & Woop bodies under construction for two 40-horsepower Mercedes cars owned by E. H. Harriman and Ernest Truslow. Instead of a rear entrance tonneau, these bodies have a wide phaeton seat. As there is not room back of the front seat for a wide door, the individual front seats are hinged at the sides to swing backward and outward. The side of the seat and a section of the side of the body combine to form the side door, which opens forward, the seat swinging with it. (See Fig. 5.) These bodies are fitted with four-bow cape cart tops having a dust protector and celluloid window at the rear.

Another interesting special job, that is being done by Locke & Company, is the building of a half-body designed to be bolted to the existing double phaeton body on a 50-horsepower Panhard to convert it into a limousine for winter use. The old body is not being altered or damaged in any way, the new top and sides with their windows and doors being made in two sections to be bolted on by the canopy top sockets and stanchion brackets.

There is cause for some wonder in the fact that no attempt is being made to provide for warming the interior of winter cars with waste heat from the engine. The body builders apparently see no reason why this could not be done by piping exhaust from the muffler under the floor, providing a cut-out for diverting the heat when not wanted, or by piping hot water from the circulation system in the same way. The only provision for heating the cars is the old foot warmers that burn smouldering bricquets. These lie on the floor and are used as foot rests. Sometimes they are covered with the same material with which the floor of the vehicle is carpeted.

Among new open touring bodies of interest that are now under construction, and which will be seen at the shows, are those illustrated in Figs. 6 and 7. Twenty of the former are being built after an exclusive design for the 1906 S. & M. Simplex cars, and the other is an exclusive design for the 30-35-horsepower Rainier cars. Particularly noticeable in these is the simplicity and angularity of the lines, offering a great contrast from the full, sweeping curves of the King of the Belgians style that became popular about two years ago.

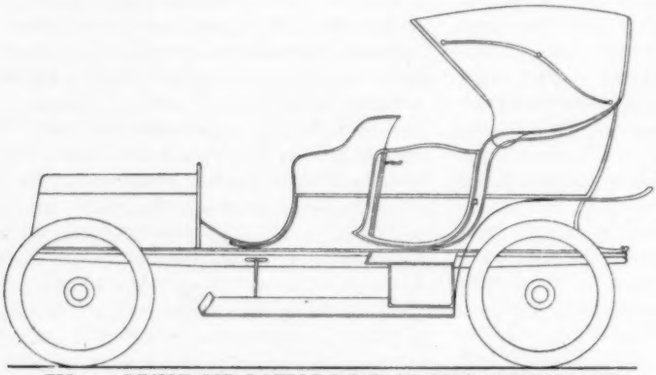


FIG. 4.—DESIGN FOR DOUBLE PHAETON WITH VICTORIA TOP, BY COLE & WOOP

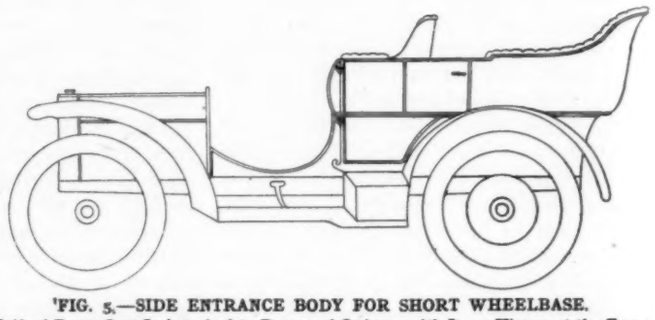


FIG. 5.—SIDE ENTRANCE BODY FOR SHORT WHEELBASE. Half of Front Seat Is Attached to Door and Swings with It on Hinges at the Front

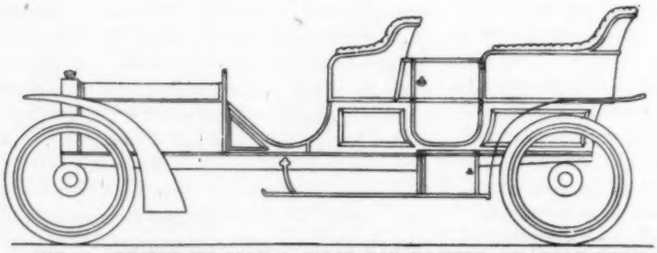


FIG. 6.—DESIGN BY COLE & WOOP FOR DOUBLE PHAETON BODY FOR 1906 S. & M. SIMPLEX CARS.

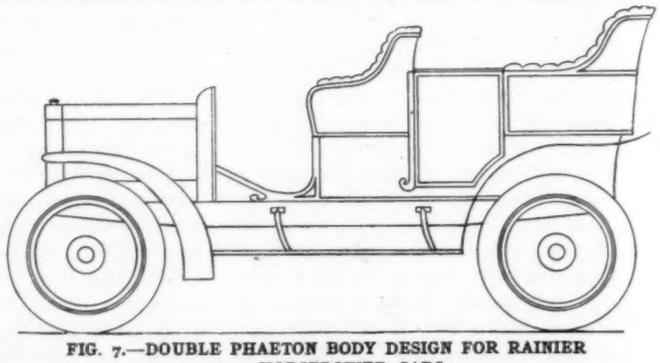


FIG. 7.—DOUBLE PHAETON BODY DESIGN FOR RAINIER 30-35 HORSEPOWER CARS.

Many results, good, bad and indifferent, have been attributed to the automobile. Certainly one of the most curious of them is their effect upon the great "family hotels" or apartment houses in New York, or at least upon several or many of them. The builder of the first great "family hotel" in New York explains that the class of hotels in question was built for wealthy men. Of course, the rent was even higher than the building. But now comes the "devil wagon," as its detractors call it, the "bubble," as the frivolous college youth names it, and away whizzes the rich man to his home in the country. He may do business in the city, and yet have a country home forty or fifty miles away. He can go home in an hour or so. He finds it pleasanter to live in the country.—*Everybody's Magazine.*

American Automobiles at the Paris Salon.

From Our Own Correspondent.

PARIS, Oct. 18.—Judging from information gathered from the different representatives of American automobile houses here, there will be a good display of American cars at the Paris show to be opened by President Loubet in the Grand Palais on December 8.

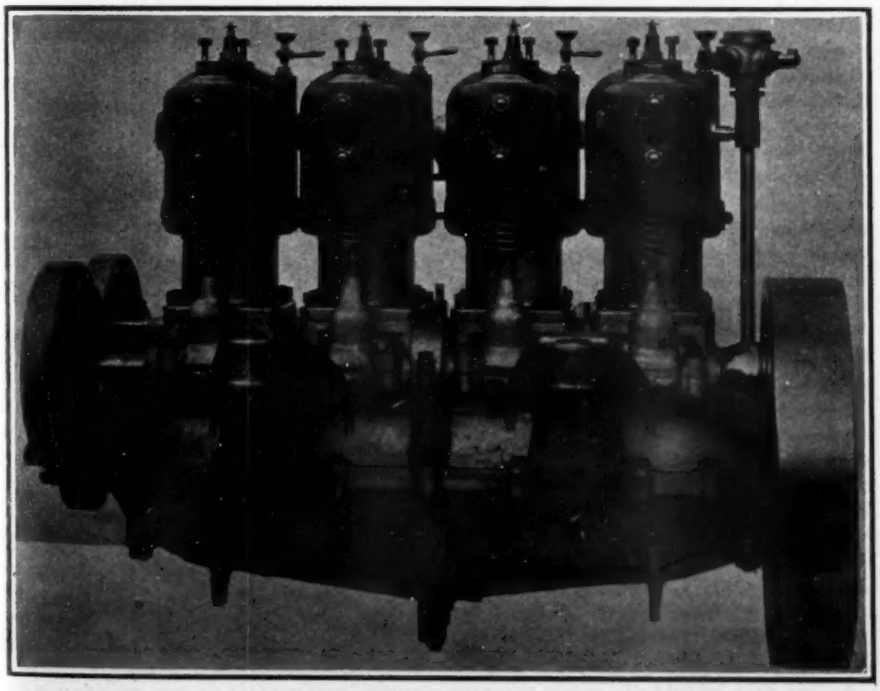
As last year, the Olds Motor Company will have a large stand, in a central part of the building. They intend to show the new four-cylinder, 24-26 horsepower, five-passenger car constructed in America on the best French lines; a two-cylinder, 16-20 horsepower, four-passenger car; and a new Model B, 1906, runabout. In addition to the chassis of these three models exposed at the salon, demonstrating cars will be kept in readiness outside the building. The runabout will be entered in the town vehicles competition to be held in connection with the salon, and owing to the special adaptability of this car for city work it is expected to make a very good showing against the French competitors. If it is possible to get the new models over in time, commercial trucks will be exposed in the annex in the Serres, as last year, the club having consented, notwithstanding the great demand for stands, to reserve a space for the company for this purpose. Mr. Poole, the European manager of the Oldsmobile, informed THE AUTOMOBILE representative that the decorations of the 1905 stand will be of a very elaborate order, equal to the very best to be seen last year. The decorating contractors have been commissioned to produce the finest stand in the show—a no small order in view of the exquisite decorations of the French stands every year—and are under a penalty to have everything in readiness twenty-four hours before the official opening. Each year the Automobile Club of France offers substantial prizes for the most artistic stands completely finished at the hour of opening, and the Oldsmobile people intend to secure one of these this year.

DOLORES CAR BUILT IN PARIS BY AMERICANS FOR AMERICAN AND ENGLISH MARKETS.—In the Car Are Messrs. Nielson, Hutchinson and Ollivier, the Builders.

Changes have been made in the representation of the company in France. Instead of one general agent in Paris acting for the whole of France, agencies are being created all over the country with the object of introducing the car into distant towns which could not possibly be reached by a single agency in the capital. Monsieur H. De la Fresnaye, of 15 rue de Débarcadère, signed a contract a few days ago as exclusive Paris representative of the Oldsmobile. The firm, which also handles Rochet-Schneider automobiles, has one of the finest garages in Paris—the bare building costing no less than $20,000.

EXHIBIT OF COLUMBIA MODELS.

The Columbia interests have secured fifty square meters of space in the Grand Palais, and forty square meters in the Serres for commercial vehicles. In this latter building will be shown a 2,000-pound commercial truck, a five-ton truck and an ambulance. In the Grand Palais will be exposed a 40-horsepower gasoline car, an electric brougham, an electric victoria and a Mark 60 electric runabout. The Columbia concern has at present showrooms in a large garage in the Champs-Elysées, but intends shortly to remove into larger premises in the Avenue de la Grande-Armée—the automobile boulevard of Paris. Although not long established in the French capital, Columbia automobiles have caught on well, the victoria Mark 61 being a special favorite for city use. Madame Walder, the well-known artiste of the Opéra-Comique, uses one of these vehicles, and Madame Sarah Bernhardt has an electric landaulet for town use. An important order for twenty-five electric delivery wagons for the Grands Magasins de la Place Clichy, one of the important furnishing stores of Paris, is just now being executed under the direction of Mr. Gammack, the engineer of the company, at present in Paris. The same store has also ordered a cinematograph automobile to be used for advertising purposes. This is a vehicle of quite novel construction, consisting of a special chassis and a completely fitted apparatus for giving cinematograph representations. It will travel around France, giving cinematograph pictures of events of the day, and at the same time advertising the firm's goods. The representative of THE AUTOMOBILE was also in-



DOLORES 24-30 HORSEPOWER ENGINE, EXHAUST SIDE.—Spark Timer on Vertical Shaft at Right.

formed that a deal was just being concluded with Herr Jellineck Mercedes, of automobile fame, for the supply of 100 electric broughams for passenger service in connection with an important hotel near the Place de l'Etoile, in which he has a controlling interest.

DOLORES AUTOMOBILES.

The Dolores Company is practically another American concern, and will make a big show at the Paris Salon. About six months ago Alexander Hutchinson, A. C. S. Nielson and M. Ollivier, three Americans, established a company in Paris with American capital for the construction of automobiles for an American and English clientèle. A factory has been secured at Puteaux in the suburbs of Paris, and machines are now being turned out with regularity. At the salon the firm will expose a 40-50-horsepower chassis with pressed steel frame, four speeds and reverse, Simms-Boch magneto, ball bearing throughout, a specially designed carbureter and Mercedes change-speed gear; also a 10-horsepower, four-cylinder town landaulet, with cylinders of 80 by 100 mm. bore and stroke. This car, which has been specially studied with a view to low cost of upkeep, will take part in the town vehicles competition. The Dolores Company is making a specialty of omnibuses, and six of their standard style 16-20-horsepower chassis are at present in use in London, with the highest results.

Four types of chassis are being constructed: 10 horsepower, 16-20 horsepower, 24-30 horsepower and 45-50 horsepower, the smallest and largest of these being the two shown at the salon. The 10-horsepower machine is the most original, having, like the new model 10-horsepower Renault, a four-cylinder engine. The steering wheel, instead of being at the right, is placed at the left-hand side, and another feature which strikes the eye is the abnormally long bonnet resembling somewhat, from its front appearance, the Mercedes type. The change-speed levers have been so arranged that the driver can pass from third to fourth—the two speeds mostly employed—without leaning forward in his seat, as is the case in most cars. Instead of being placed within the bonnet, the Eiseman high-tension magneto is on the front dashboard, and the spark can be seen through a glass panel. It is driven from the exhaust camshaft and is coupled by a chain. Oiling is automatic and the lubricator is placed within the bonnet, so that the heat from the motor will always assure a constant flow. Ball bearings are used for the wheels and change-speed gear, each ball being protected by running in a small cup, so that, should one be broken, it would not damage the bearing. The four cylinders are cast separately and have equal valves mechanically operated. The large ventilating fan behind the honeycomb radiator is highly geared to give a powerful draught when the motor is running slowly. With the exception of the 10-horsepower chassis, which has a live axle, all the models are chain driven. There are four speeds and reverse, the high being in direct gear, and a leather-faced cone clutch. Seventy-five liters of gasoline are under pressure in all but the 45-50 model, which has a tank capacity of 100 liters.

AMERICAN LOCOMOTIVE COMPANY.

The American Locomotive Company, 111 Broadway, New York, have also secured a large stand for the Salon, obtaining a very central position in the drawing for positions.

Pope-Waverley electric automobiles will be shown by the Paris agent, but evidently the Pope-Toledo cars will not be on view, as they were last year, no direct entry having been made with the Automobile Club of France.

The White steamer, although represented in Paris, will not be on show; and the Winton, the European agent for which informed THE AUTOMOBILE representative a short time ago that he was considering the question of exhibiting, has not sent in a request for space to the Automobile Club. In all, five American firms will have stands at the eighth annual French automobile salon.

New French Regulations.

PARIS, Nov. 2.—The Governmental commission to amend the automobile laws, which has just closed its sittings, proposes that no person under sixteen years of age should be allowed to drive an automobile. Persons not less than sixteen years of age can drive automobiles of not exceeding 2 horsepower, and from eighteen years of age a driving certificate can be obtained for automobiles not exceeding 35 horsepower. From twenty-one years of age there would be no limitation of power.

It is recommended that the papers to be produced before a driving certificate be granted shall consist of birth certificate, two photographs, certificate of residence and a medical certificate. The candidate must also show that he has not been condemned for a criminal offense. After all these have been approved the candidate must undergo an examination before the inspector of mines to prove his ability to handle an automobile intelligently. When granted, the certificate will clearly indicate the power of the automobile the holder is entitled to drive, and on the name-plate will have to be fixed in smaller letters, below the owner's name, the type of car and horsepower.

In towns it is proposed to abolish the use of horns, using instead electric or other bells of a type to be approved by the Minister of Public Works. In the open country either bell or horn may be used, as desired. An inspection of brakes at frequent intervals, as was proposed some time ago, is not recommended by the commission, and the question of the limitation of speed, or the adoption of speed indicators, was not even touched upon in the report.

A few days ago M. Darracq, as president of the Syndicated Chamber of Automobiles and Cycles, was heard by the commission. He pointed out that France, contrary to most nations, had commenced by being very liberal toward automobiling and was gradually becoming reactionary and conservative. Up to 1899 speed was not limited, and even road races would be held without ministerial permission. Then, as the result of an accident, a limit of twenty kilometers in towns and thirty kilometers in the open country was imposed. It was an absurd regulation, he said, for in towns the speed of twenty kilometers had been reduced by order of the mayors to eight, ten or twelve kilometers, and a limit of thirty kilometers in the open country was never enforced, it being impossible to maintain such a crippling regulation against vehicles whose *raison d'être* lay in their being able to travel at more than thirty kilometers an hour. M. Darracq pleaded for the abolition of all speed limits, on the ground that there was no guarantee that even when running at less than the regulation limit accidents would be less numerous; that the fixing of a limit implied a certain immunity from responsibility for accidents if the regulation speed were observed; that timing overmeasured distances was not trustworthy, and that it was impossible to construct speed indicators which would work satisfactorily on all classes of automobiles.

He asked that driving certificates should not be granted with the same freedom as at present, and proposed a special certificate for professional chauffeurs, as well as inquiries into the moral character of all candidates for driving permits. Every chauffeur, he maintained, should be made morally responsible for accidents while driving, and not the owner or president of the company to which the car might belong. At the same time the conditions under which each accident occurred should be considered before a judgment was passed, and the law should be made similar to that governing accidents while at work.

The Minister of the Interior has not yet decided to what extent he will legislate on the lines proposed by the commission, but the new regulations will probably be made known in a few days.

PRIZE FOR ACCESSIBILITY.

PARIS, Nov. 2.—Baron Pierre de Caters is of opinion that it is only in their details that automobiles need to be modified to make them absolutely perfect. Few men have driven more than the Baron, and he ought to know the possibilities that are opened to constructors willing to compete for the cup which he has just offered to the Academy of Sports for "accessibility of mechanism."

The cup will consist of an object of art of the value of $1,000, to be held for one year by the constructor whose motor shall, in the opinion of the academy, be the most simple in construction and the most easily

accessible; in addition a reproduction of the cup in some cheaper metal will be held permanently by every constructor having once gained the trophy. In making his offer Baron de Caters asks that this year's prize be awarded immediately before the salon, in order that the winner may obtain the greatest amount of profit from his victory during the show.

Sicilian Touring Contest.

PARIS, Nov. 2.—Sicily will be the scene of important automobile contests next year for the first time. Chevalier Florio, donor of the cup bearing his name, has the intention of organizing a meeting on the island in April, to include two classes of touring cars, one for chassis, selling at less than $3,000 and weighing not more than 2,200 pounds, and another in which the limits shall be from $3,000 to $4,000 and weighing 2,860 pounds. Each car must have two seats occupied, and five vehicles can be entered from each factory.

This event appears likely to become one of the most important touring contests ever held in Europe, for, in addition to the gold shield—the Targa Florio—for the winner, there will be important money prizes. Sig. Fiagari, a well-known Italian sportsman and president of the Itala automobile firm, has offered $6,000; and the Chevalier Florio, in returning thanks for this gift, announces his intention of adding to it a sum of $4,000, making a total of $10,000 in cash prizes, the largest amount ever offered for a touring event. The sum will be distributed as follows: First prize, $5,000 to the owner of the car and $1,000 to the driver; second prize, $1,600 to owner and $400 to driver; third prize, $800 and $200; fourth prize, $600; and fifth prize, $400. M. Florio declares that several of his compatriots will also offer works of art as prizes.

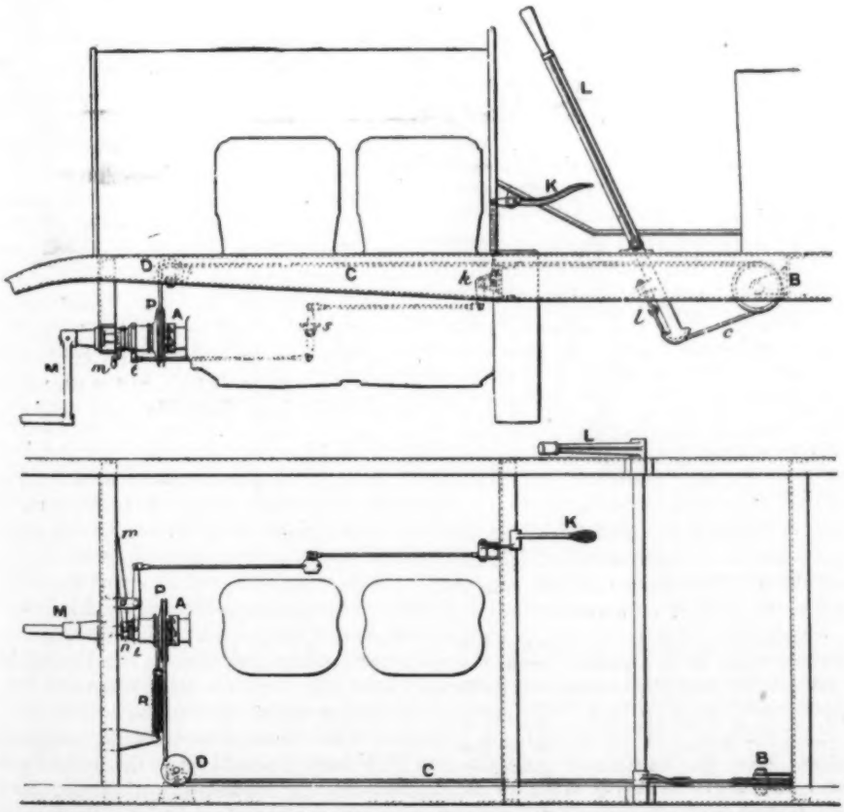
Besides the touring event around the island, speed tests over a five-kilometers course and a hill climb over an eight-kilometers course, starting in the town of Palermo, will doubtless be held.

Hitherto Sicily has not loomed large in the automobile world, and, indeed, at the present moment it can only claim a few French motor cycles and a small number of automobiles introduced into the island by Italian automobilists, but for a touring event it possesses unique qualities. There is beautiful scenery, with the blue waters of the Mediterranean in sight for long distances; twenty-five miles of the course are straight and level, allowing of the highest speeds; the rest is over rolling and winding roads, and there are a few hills to climb, for the highest point of the circuit is 1,400 meters (4,593 feet) above sea level. The starting point is on a straight stretch about ten miles from the town of Palermo. The total length of the circuit is about 100 miles.

Among those who have already announced their intention of taking part in the event is Henry Fournier, who retired from all such events several years ago, but has had his old enthusiasm rekindled and will handle an Itala car.

From Marseilles a reduction of 75 per cent. will be made on the ordinary freight charges for automobiles.

Lancia, in an interview while passing through Paris on his way home from America, declares that he will drive for the Targa Florio, and that three Fiat cars will be at the start.



DEVICE FOR STARTING RICHARD-BRASIER ENGINE FROM THE OPERATOR'S SEAT.

Starting from the Seat.

Apropos of the offer of M. Henry Deutsch of prizes for the best automatic starting gear for automobile engines, the Richard-Brasier car for 1906 will be provided with a special device for starting from the seat supplemental to the ordinary crank in front. The device is in no sense automatic, but, while in the same class as the front crank, it has certain advantages over the older method.

As described by *La Vie Automobile*, one part of a toothed clutch *A* is keyed to the main shaft, on which the other part carrying the grooved wheel *P* revolves freely. A special pedal *K*, attached to the dash, is connected by a series of levers and connecting-rods with collar *t* by which *P* may be thrown into gear with *A*. A lever *L* on the right of the driver operates a wire cable carried over pulleys to the grooved wheel *P*; a pull on the lever causing *P* to revolve, carrying the shaft with it. The spring *R* serves to disengage *P* from *A*. The forked lever *m* and collar *n* are used when it is desired to start by means of the handle *M*, in the usual way; by pulling *m* forward *P* is thrown into gear with *A*, as in the operation of the pedal *K* from the seat. It is expected, however, that the handle will cease to be a permanent fixture, being carried in the tool-box as an auxiliary and in time discarded entirely.

Foreign News Notes.

From July 1 to September 30 of the present year the London County Council registered 954 automobiles and 371 motorcycles. It issued 2,951 driving licenses. During the whole period of the operation of the Motor Car Act the Council has registered 8,059 cars, 4,808 motorcycles and granted 22,549 licenses.

The Auto Cycle Club of Great Britain and Ireland held a passenger tri-car reliability trial on October 21 over a course of 124 1-2 miles. Of sixteen starters, ten finished and four made non-stop runs. Clifford Earp, on a 6-horsepower Singer, made one stop owing to a bad contact. The best time made on the Dashwood Hill was 2 m. 20 1-5 s., by the 10-horsepower Lagonda. Earp was second best, in 2:27-5.

About 150 persons attended the formal opening on October 26 of the new headquarters of the Ladies' Automobile Club of Great Britain and Ireland in Claridge's Hotel, London. A lecture on "Historical Reminiscences and Wayside Experiences," illustrated by lantern slides, was given by Hon. C. S. Rolls.

Unfavorable Newspaper Influence and How to Counteract It.

(*Concluded from page 527, issue of November 9.*)

ONE of the greatest opportunities open to the automobile associations and the local clubs at the present time is in counteracting the unfavorable influence of a very large proportion of the publicity given the automobile and assisting in presenting the better side of this means of locomotion. Obviously it is essential that the work should be done, and it can be done effectively only by such organizations. How to go about it is, of course, the important question. Several ways at once come to mind. In the first place, it should be kept in mind that newspapers are edited by human beings, and that unbiased and clear-minded opinions on the subject cannot be written without a knowledge of both sides of the question.

The first move, then, is to start a campaign of education among the newspaper men. Many club members and officers have observed the efficacy of demonstration rides given to boards of aldermen and to senators and representatives before whom were pending measures for the registration of automobiles and the restriction of their speed. Similar methods would prove even more successful with the editors and reporters, for they are more likely to be open to conviction by a few demonstrations by competent drivers than are legislators. Any change or modification of opinion by them is not susceptible of the same misconstruction as are the acts of a legislator.

A ride through the busy streets and out into the country with a capable driver who has the general good of automobiling at heart will at once show a fair-minded newspaper man that there are two sides to the automobile question, as there are to all others. More than once he will tighten his grasp on the sides of the seat with nervous apprehension as some heedless pedestrian steps from the curb or from behind another vehicle or street car directly in front of the machine; he will note how drivers of coal, lumber and hay wagons refuse to give a foot of roadway to the driver of the car approaching from behind; he will observe with what dexterity and certainty the operator guides the car among the traffic and will be nearly projected from his seat as the machine is brought to a sudden stop in a quarter of the distance a team of horses would need.

After such a ride the newspaper man will go back to his desk with some new ideas and a determination not to let his judgment be influenced by prejudice; every successive ride will do more to convince him that a great deal of the adverse criticism arises from ignorance on the subject and unwarranted prejudice on the part of persons who have but one point of view—that of the pedestrian or the driver of horses.

How a demonstration may change a man's ideas is indicated by an account published some time ago in a Chicago daily paper regarding a state official who was one day invited to take a long ride through the country in a big car. He rode about seventy miles through Sangamon and Christian counties in Illinois, and upon his return in the evening was asked about his trip.

> "I never imagined that so many different things could happen on the public road until I took this ride," he said. "I am well within the truth when I say we passed twenty-five single or double rigs. The drivers and the horses made all kinds of funny moves to get out of the way. Our machine stopped every time we met a horse or team that displayed any tendencies of bad disposition. . . . The most noticeable thing, however, was the good nature of the farmers. They all wanted to see how the machine worked, and I think everyone who said anything at all remarked that he wanted his horses to be used to 'things.' The conduct of our driver made friends everywhere. . . . I guess if the automobilist is careful and behaves himself and respects the rights of others to the use of the road, he will soon overcome the prejudice that now exists."

With a good knowledge of the situation from all sides, many more writers would "size up" the matter in the sensible and fair way that the Chicago *Chronicle* does in the following excerpt from an article in a recent issue:

> "The farmer whose skittish colts take fright at a motor car has the old spirit of antagonism that distinguished him in the days of the bicycle fever, and among other precautions the shotgun has been talked of in certain quarters to stop the mad career of the tourist from the city.
>
> "The remedy for the whole situation is education. The man on foot should learn that all automobilists are not scorchers; the farmer should know that the motorist is the man who will help him to better the roads. The men who run the cars should be fully alive to the rights of others and should be fully as expert in regard to his car. When these things are learned, the automobile will have been started at a rapid pace towards the goal which it ultimately must reach."

It is not difficult to read between the lines of an editorial in the Woodstock, Ill., *Sentinel*, the story of an automobile ride enjoyed by the editor, who writes:

> "Farmers, generally speaking, have formed such an antipathy against the automobile owners that some of them do not give the subject a square deal. In the first place the automobile is a permanent fixture in its rights to the public road, and owners of machines have too much money at stake to do any foolish act or violate any law governing their use, and while there may be now and then some 'young bloods' who fail to be decent in the running of machines, there are also farmers who provoke them and fail to recognize the mutual rights of the road. Farmers have been known to keep the whole road just to prevent an auto from passing when they should turn to the right and give one-half the road when they hear the signal of the approaching machine. It would be well to cultivate a better feeling. Obey the law and by careful treatment teach horses to become acquainted with the new competition."

There is nothing ulterior in the motives of a club that undertakes a campaign of education along the line suggested—it is merely placing the molders of popular opinion in a position to weigh the subject with unbiased minds. As newspaper men are usually very busy persons, it may be best for a club to select a Sunday or a holiday for a general outing; probably a more feasible and less ostentatious way, however, would be for the individual club members to take the publishers, editors and reporters out by appointment, one or two at a time. No doubt this could best be done on Sundays and holidays.

In addition to giving demonstration rides, the club should make a practice of furnishing good news "copy" to the papers. Any one who is a good source of news is beloved by the reporters and sporting and city editors. It is easy for the club secretary, the chairman of the runs and tours committee, or the chairman of the entertainment committee to win their friendship by welcoming them when they call and rewarding them for their pains by giving them some interesting items concerning club affairs. It should be the aim of the officers to constantly "make" news by promoting runs, parades, contests, entertainments, and, more important still, by conducting campaigns for street improvements and discouraging those drivers of automobiles who by their recklessness and indifference to the rights of others bring opprobrium upon all automobilists as a class. Instead of hiding their lights in the garages, the club members should let them so shine that the newspapers will find something good to say about the club and its individual members. The best way to abolish unfavorable items is to create news that places the user of the automobile in a favorable light before the public.

By way of impressing this matter seriously upon the minds of all club members, the secretary or some other officer who has a little spare time, could do a good work by making a collection of all items relating to the automobile that are published in his city or county for, say, one month. He could produce these clippings at a regular meeting, sorted into favorable and unfavorable items and classified by accidents, speeding, arrests and suits, and editorials and comments. This would bring home to the members the necessity for concerted action and would suggest a plan of campaign suited to the needs of the locality.

Practical Experiences with Air-Cooled Cars.

By HARRY B. HAINES.

Continued from issue of November 2, page 494.

THE slipping of the adjusting nut on the high speed clutch brought the machine to a short stop one day, and for a time made me believe that the motor had overheated and the piston stuck in the cylinder. I was driving along at a fair rate of speed when suddenly the motor, without missing a spark or giving any signs of overheating, began to slow down and then tried to take hold again, the engine exploding regularly but the machine bucking and jumping like a broncho. I applied the brakes and at the same time tried to pull out the high-speed clutch, but found that I was unable to do so. I pulled out the coil plug, and as the motor stopped, got out to investigate. Upon putting the starting handle in place and attempting to pull out the high-speed clutch, I found that the whole machine went forward and it was evident that the high-speed clutch had in some manner locked itself up tight.

The High-Speed Clutch.

The high speed on this machine was obtained by throwing into frictional contact two plates, one of which had on it a circle of round hard wood discs which meshed, when the clutch was in operation, into the other member of the clutch, which was a bronze plate having holes bored into it to receive the wooden discs. The adjusting screw or bolt was on the outside and the clutch was tightened by turning the adjusting plate to the rear, or loosened by turning it forward. The screw holding it tight on the shaft had worked loose and the clutch had wound up from the movement of the shaft on which it worked until it was hard and fast. It was necessary to get a heavy hammer and a block of wood and drive the clutch adjustment around until it loosened, after which it was properly adjusted and we were able to continue.

A very peculiar knock which the expert at the storage station ascribed as due to the fact that the gears operating the time shaft had worn, proved to be due to an entirely different cause. It seems that the steel roller operating the exhaust valve rocker arm had not been properly oiled and had beaten and bound on its bearing, causing the cam to strike it at the same spot on each revolution instead of rolling around as the cam came against it, as it was designed to do. The result was a flat spot worn in the steel roller and a loud knock as the cam pounded against it each time. It was necessary to get a new steel roller before the noise could be stopped.

Exhaust valve troubles were rather frequent, and on one occasion I was stalled by the snapping of the small key ring used to connect the exhaust valve rocker arm with the valve itself. I had no other key ring handy, but managed to make a temporary repair by cutting some strands of wire out of a barb-wire fence and twisting them into place between the valve and the rocker arm. The wire served the purpose admirably, and I used it for some weeks before changing back to the key ring again.

Loss of Compression.

A loss of compression that caused overheating of the motor developed some time after this, and I discovered that the small steel face on the rocker arm which knocked against the end of the exhaust valve stem in forcing it open, had worn considerably and did not open the valve properly. It had worn into a little ridge that also prevented the valve from closing properly. I unscrewed the small plate and filed it flat, and then, putting two washers behind it, returned it to its place and found that it worked all right again.

It is well known that the power of any gas engine depends on its compression, and it is particularly essential in an air-cooled motor that the compression be kept good. Loss of compression may be caused by so many different things that it is rather difficult to give any instructions that will appear definite. Dirt under the valve seat, wearing of the cams or their operating gears (causing improper timing of the valves), and a dozen other causes may make trouble. It is essential, however, that every owner of an automobile should know how to set his exhaust valves so that they will time properly, and the following brief instructions should prove useful.

The single-cylinder air-cooled motor, of which I have been writing, is of the four cycle type, which means that an entire cycle of operations is completed during the four strokes of the piston, as follows: First stroke—induction—piston moves outward, exhaust valve veing held closed; inlet valve opens automatically by suction of the piston and a charge of combustible mixture is drawn in. Second stroke—compression—piston moving inward, both valves closed. Third stroke—combustion—piston moving outward, both valves closed (ignition takes place near the commencement of this stroke). Fourth stroke—exhaust—piston moving inward, exhaust valve held open by the cam on the time shaft.

When the piston is at the extreme of its inward or the extreme of its outward stroke, the crank is horizontal, and the engine is said to be "on center." It is on the "inward center" when the piston is clear in and on the "outward center" when the piston is clear out. The exhaust valve cams should be so located on the valve shaft that the exhaust valve will commence to open about 30 degrees before the crank reaches the outward center and should close just as the crank reaches the inward centre. The inlet valves are automatically closed by the pressure in the cylinder and opened automatically by the suction of the piston.

Setting 2 to 1 Gears.

To set the valve shaft gears so as to properly time the exhaust valve, it is necessary to unscrew the bolts on the top of the engine bearing nearest the flywheel and unmesh the spiral gears. Turn the flywheel in the usual direction of its travel until the crank is about 30 degrees below the outward center. This 30 degrees is equal to 6 inches measured on the periphery of the flywheel. Turn the valve shaft until the exhaust cam commences to touch the roller on the rocker from below; then lower the shaft, remeshing the spiral gears, taking care not to turn the flywheel more than an inch either way in getting the gears back into mesh. Replace the bearing bolts and then turn the flywheel in the usual direction until the exhaust cam leaves the rocker and the exhaust valve closes. The engine should then be on the inward center, as indicated by the notches on the flywheel marked "O," or within an inch of the same. If your valve is properly set, and if it seats properly and holds compression you need have no fear of overheating from this source.

On one occasion the motor had me puzzled for a time, owing to the fact that it did not govern properly, running very fast with the spark lever drawn to the point where it ordinarily ran very slow, running fairly well with the spark lever advanced to the point where it usually ran at half speed, but choking up and stopping when the lever was thrown wide open, where the engine normally developed its highest speed. After some experimenting I discovered that the trouble was in the butterfly valve or damper controlling the flow of gas. This valve must have the lever arm pointing forward when it is set, and a mechanic in adjusting it had put on the controlling rod with the lever arm pointing back and had reversed the action of the valve. Instead of giving more gas as the spark was advanced, the supply was shut off and the motor stopped as a consequence.

Don't Use Too Much Oil.

In operating the air-cooled motor it should be remembered that in many instances where too much lubricating oil is used it carbonizes in the explosion chamber and on the piston head, and from the constant explosions becomes incandescent and causes the motor to fire prematurely. Scraping out the carbonized matter is the only method of overcoming this.

I had considerable difficulty with the gasoline feed when the car was run over roads that were well crowned. The gasoline feed pipe to the carbureter was located on the extreme left of the tank, and when the car slanted to the right all the gasoline would flow to that side of the tank and as

soon as the supply in the carbureter was exhausted the engine would stop. I have been stalled with two or three gallons of gasoline in the tank. A new tank, built sloping from both sides, and with the gasoline feed directly in the center remedied this situation.

At another time the engine was stalled as a result of too much gasoline. The small petcock used to prime the engine before starting had worked open and poured gasoline on the suction screen, choking the motor. It was necessary to take out the spark plug and turn the engine over to work out the surplus gas and then clean the plug points before I could continue.

The Winter Situation.

One great point of superiority claimed for the air-cooled cars has been that they are all-the-year-around machines and can be run equally well on either the warmest day in summer or the coldest day in winter. Two or three years ago, when radiators and circulating pumps as well as gaskets were giving trouble, and the fact that non-freezing solutions and even oil could be successfully used for the cooling of water jacketed engines was not as generally recognized as it is to-day, this was to a great extent truer than it is now. An air-cooled motor, however, possesses certain advantages for winter use that make it extremely valuable and efficient. It is possible with a motor of this sort to enjoy winter riding without the fear of circulating water freezing and the danger of bursting water jackets and wrecking pumps and radiators, but even with this source of trouble removed the driver of an automobile in winter should not fall into a careless habit in handling his car.

As a usual thing a gasoline motor when cold is a rather hard proposition to start, and the air-cooled motor is no exception. Lubricating oil, if not used intelligently, is apt to gum up the cylinder and stick the piston, making the engine hard to turn over. Diluting the lubricating oil with about 10 per cent. of kerosene will overcome this difficulty.

Generally speaking, one may say that the chief troubles attending the operation of an air-cooled gasoline motor in winter are, the difficulty of securing correct gasoline mixture or carburation at low temperatures, and the irregularities of lubrication due to increased density of oils at low temperature. These troubles, however, apply equally to water-cooled cars.

The one great bugaboo of winter use is starting the motor when it is cold. I have spent considerable time at the starting crank in trying to force cold gasoline to carburate. It is plainly evident that the heat necessary to vaporize the gasoline for the first explosion must all come from the metal of the carbureter or the surrounding air, and when both are in a cooled condition there is little tendency for a proper evaporation of the liquid, which is chilled by contact with the cold metal. After the carbureter does give a good mixture it may, under some conditions of low temperature, be condensed in the cold cylinder, and if the air happens to be warmer than the engine, moisture may be condensed upon the spark plug and so affect the sparking. An engine which cannot be started on account of the cold may in every instance be made to operate by a little attention along the proper lines.

Heating Up Before Starting.

Some owners make it a point to use the very light grades of gasoline in the winter, as the high test liquids evaporate freely at comparatively low temperatures. One can say, in general, that there is no unsurmountable difficulty in starting an engine no matter how cold it may be, if sufficient heat can be brought with safety along the line of the gasoline feed.

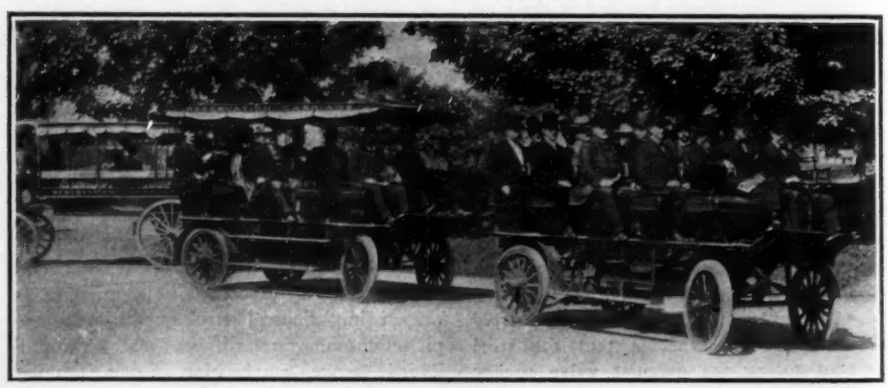
Cloths soaked in hot water and wrung out, laid on the carbureter will help some, and I have also found it a good idea to heat the end of the spark plug by holding it over a gas jet, being careful not to damage the spark points. Returning the heated plug to the cylinder and then priming the engine well will generally result in action. When the engine has been particularly stubborn, I have poured boiling water over the cylinder, taking care to keep the water away from the inlet valve and spark plug and its connections. Squirting gasoline from an oil gun (heated by being wrapped in cloths soaked in hot water) into the inlet valve chamber has also helped in getting a cold motor started.

Water in the gasoline is a cause of considerable trouble in winter, and straining all gasoline used through a chamois before putting it into the tank will, to a great extent, overcome this.

More cylinders are cut and engines put out of business in the winter than in the summer, the result of imperfect lubrication and consequent overheating. In machines fitted with a gravity feed cylinder oil cup, care must be taken to see that the oil really gets to the cylinder and on the piston as intended. Thinning it out with kerosene helps considerably, but the adjustment must be watched carefully at all times. Oilers adjusted to feed properly in their cold condition will flood the engine when it warms up and vice versa.

I was of the opinion that an air-cooled motor such as mine would operate in cold weather as well without a fan as with one, and one winter day when the fan belt broke on the road I did not bother to replace it, but continued along, depending on the radiation of the cylinder pins to accomplish the cooling work. All went well for a few miles, and then the engine began to labor and threatened to stop. I got out to investigate and found out that the engine was suffering with an attack of overheating as severe as any it had ever experienced in July. I put on a spare fan belt and opened up the lubricating oil feed a little and continued without further trouble. It seems that with a motor tucked away under the body the changes of temperature do not cut so much of a figure and there must be direct radiation to ensure successful operation on a cylinder as large as this one, which was 5-inch bore by 8-inch stroke.

(To be continued.)



Visitors to Niagara Falls and the New York State Reservation have during the past summer enjoyed being carried from point to point on the state lands in automobiles operated by electric power, and the inauguration of this service has proved so satisfactory that it may be looked upon as thoroughly established. The New York State Reservation was opened free to all mankind forever on July 15, 1885, and ever since that date the carriage service has been by carryalls. The fare is fifteen cents for a ride of about two miles. Until recently the stages have been operated by John C. Level, but now the John C. Level Company, Inc., is in charge, with Mr. Level as the manager. It has required twenty-three stages to accommodate the visitors during the summer rush. The electric automobiles shown herewith were placed on the route during the past summer, six machines being used. Each brake is of 7 horsepower and will seat twenty passengers. It is run at about eight miles an hour, and therefore makes the tour in about fifteen minutes. Two more machines will be added next summer, when it is expected to entirely abandon the horse service.

Franklin Air-Cooled 1906 Models.

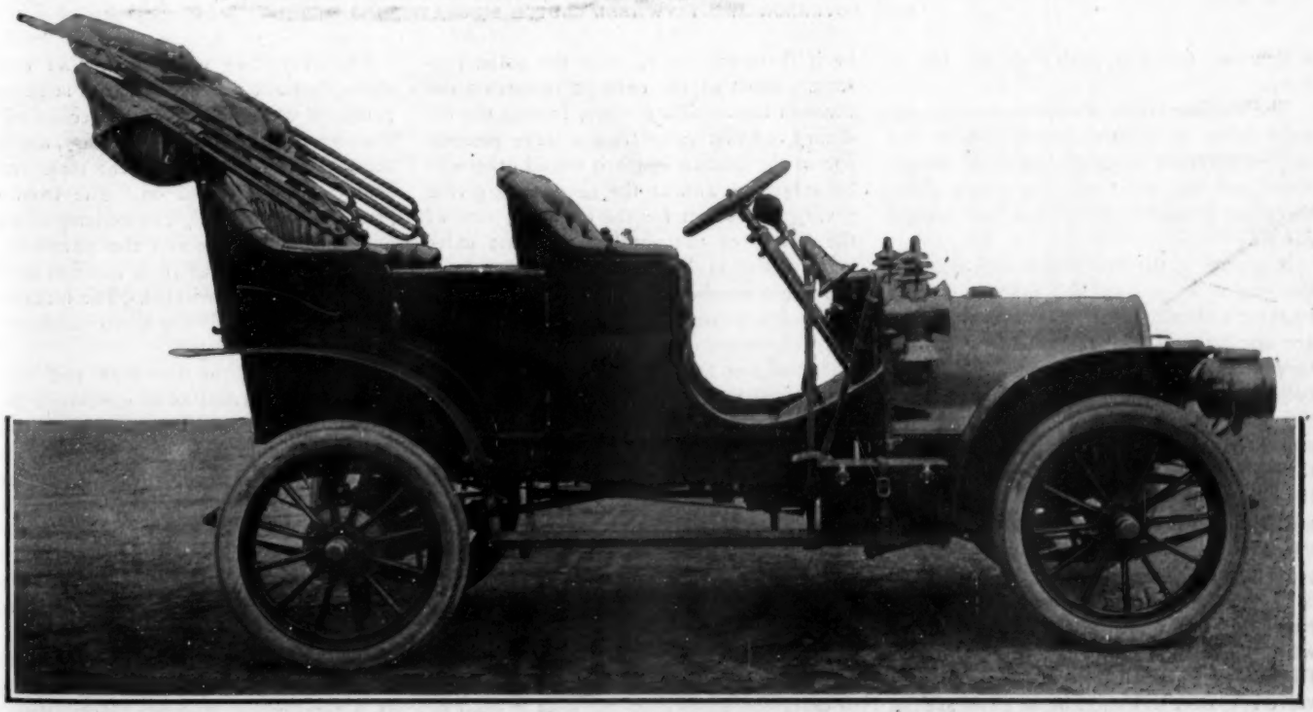
FOUR models, one runabout and three touring cars, constitute the 1906 line of Franklin air-cooled cars, manufactured by the H. H. Franklin Manufacturing Co., of Syracuse, N. Y. All have vertical air-cooled motors embodying the same mechanical features; three will have four cylinders and one a six-cylinder motor. All will have ash wood frames and full elliptic springs. Following are brief descriptions of the main features of each car:

Type E, called by the manufacturers the "Gentleman's Roadster," is the well-known Franklin runabout with four-cylinder motor set transversely under a wide bonnet in front, driving through a two-speed planetary transmission and single chain to the live rear axle. The motor is of 12 horsepower cooled by natural air circulation, and the car is stated to be capable of attaining a speed of forty miles an hour; the cylinders have a bore and stroke of 3 1-4 inches. The front axle is tubular; the wheels, 28 inches in diameter, run on roller bearings and are shod with three-inch tires. The live rear axle is mounted on roller bearings. Springs are full elliptic, thirty inches long both front and rear. The body is of aluminum, built up on a framing of angle steel; the hood is also of aluminum and can be tilted backward or removed entirely. The seats are of the individual pattern and are comfortably upholstered in enameled leather. Double-acting brakes are placed on the rear hubs and are equalized so that the braking effort is equally divided. Steering is by wheel, irreversible; weight of car, 1,100 pounds. Wheelbase, 81 1-2 inches.

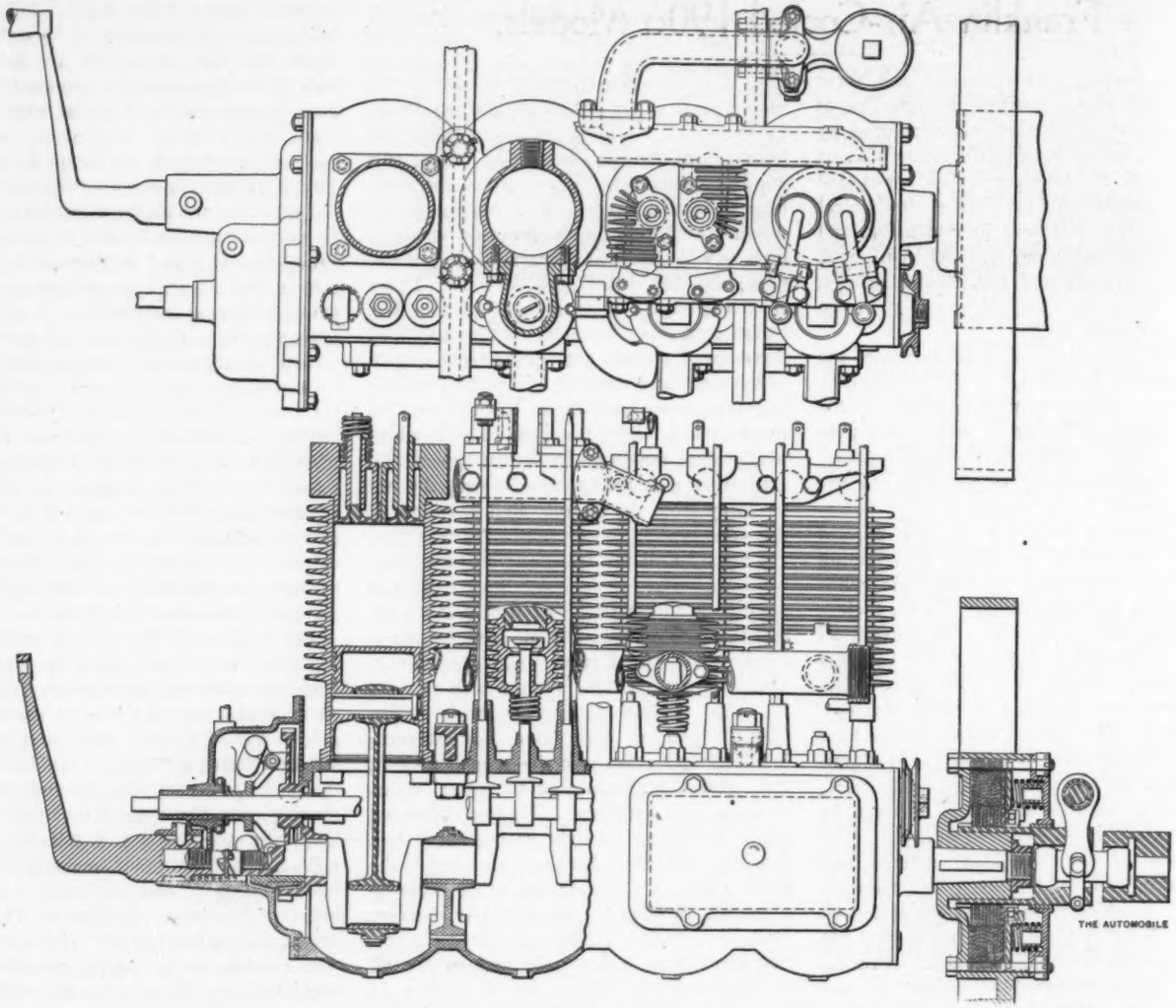
Type G is a light touring car equipped with a 12-horsepower motor similar to the motor used in the runabout, but set longitudinally under a long, low, semi-cylindrical hood, with circular opening in front; this hood is a characteristic feature of the three larger Franklin cars and is readily recognized. The body is of the side entrance type and is designed to carry four passengers; the side doors open forward. Drive from the engine is through a multiple disc clutch with metal-to-metal friction surfaces, three-speed sliding gear transmission, propeller shaft and bevel gears to the live rear axle, the latter running in ball bearings of the so-called Mercedes type. The flywheel is cast with fan-vanes in lieu of spokes and acts as an exhausting fan, drawing the hot air away from the motor. Ball bearings, of the same type as those used in the rear axle, are fitted to all the transmission gear shaft bearings. The transmission gearcase is of aluminum and is provided with a large removable top plate. Nickel steel having a tensile strength of from 108,000 pounds to 136,000 pounds to the square inch is used for the transmission gears and shafts. Nickel steel is also used for steering knuckles and yokes and the propeller shaft, the latter being subjected to special treatment to give toughness. The bevel driving gears run in an oil-tight casing; both ball bearings and babbit bushings are used in the bevel gearcase, the bushings being made by a special process at the Franklin factory. Balls are used for the outside or wheel bearings. The full elliptic springs are all 36 inches long; wheels are 28 inches in diameter, with 3 1-2-inch tires; double-acting brakes are placed on the rear hubs and operated by a hand lever, and another brake, also double-acting, is placed on the drive shaft and operated by a pedal; wheelbase 88 inches and tread standard; steering gear is irreversible; body of aluminum on angle steel framing; hood of aluminum and can be tilted back or removed entirely; weight of car about 1,300 pounds.

Type D is practically a duplicate of Type G, on a larger scale; the motor has four cylinders of 4 inches bore and 4 inches stroke, and is rated at 20 horsepower; the drive, bearings, transmission, brakes, steering gear, body (both in shape and in construction) are similar to those parts of the 12-horsepower car. There is, however, ample room for five passengers; wheelbase is 100 inches; wheels are 32 inches in diameter and tires 3 1-2 inches; springs are 40 inches long. The flywheel is used as a suction fan, as in the smaller touring car; and in addition to this there is a gear-driven fan in front. So far as outside appearance is concerned, the two machines are practically identical except in size.

The largest of the 1906 Franklin cars, Type H, is a 30-horsepower touring car with six cylinders, the cylinders being of the same dimensions as those of the 20-horsepower car—4 inches bore and 4 inches stroke. There is a general resemblance between the 30-horsepower car and the smaller touring cars, but Type H is larger in every way; the wheelbase is 114 inches, the six cylinders of the motor make a very long hood necessary, and the entire car has a long and low-hung appearance. The wheels are 34 inches in diameter with 4-inch tires. The machine weighs 2,400 pounds and its maximum speed is given as about fifty miles an hour. The cooling arrangements are the same as in the 20-horsepower touring car—



FRANKLIN 20 HORSEPOWER TOURING CAR FITTED WITH AIR-COOLED MOTOR AND SIDE-ENTRANCE BODY



PLAN AND ELEVATION OF THE FRANKLIN 20-HORSEPOWER AIR-COOLED MOTOR PARTLY IN SECTION, SHOWING RADIATING FLANGES, VALVES AND VALVE-ACTUATING MECHANISM, PISTON AND CRANKSHAFT, ALSO GOVERNOR AND FLYWHEEL CLUTCH MECHANISMS.

a flywheel fan and a gear-driven fan in front.

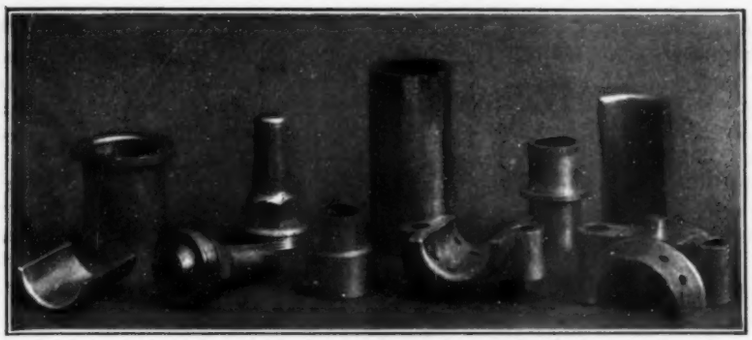
The motors of the Franklin cars are exactly alike in constructional details, the only differences being in cylinder dimensions and the number of cylinders used; therefore a description of one will answer for all.

A glance at the line engravings showing the engine in section will make the more important details clear. Deep, thin flanges are cast integral with the cylinders and extend from the top to a point considerably below the top of the piston when at the lowest point in its stroke. The usual inlet and exhaust valves, mechanically operated through rocker arms, open directly through the cylinder head; and, in addition, there is an auxiliary exhaust valve, operated by its own cam on the single camshaft used. A port, uncovered by the piston at the bottom of its stroke, permits the exhaust gases to pass out at the end of the exhaust stroke when the valve is held wide open by its cam. During the suction stroke, however, the valve is closed, so that exhaust gases are not drawn back into the cylinder as they would be if there was no valve in the outlet passage. Much of the exhaust is carried out through the auxiliary valve, freeing the ordinary exhaust valve from a large percentage of the heat to which it would otherwise be subjected, and at the same time giving a very free outlet for the exhaust. One of the effects of the auxiliary exhaust valve is to assist in keeping the cylinder head cool; and another result is that carbon deposits are carried away through the lower passage instead of collecting in the combustion chamber and fouling the spark plugs. The auxiliary exhaust passages, in fact, require cleaning about every thousand miles to remove the deposits that gather there. The auxiliary exhausts discharge into their own exhaust pipe leading to the muffler, the upper exhaust valves having another pipe. The valves in the cylinder head are made as large as the diameter of the head will permit, and are placed in housings which can be removed, with valves in place, by removing the holding-down bolts. The housings are flanged for cooling, and are arranged to carry the gases over the head instead of through it, as was the case last year.

The crankcase is of aluminum and is made the same as last year, with large cover plates on one side, so that inspection of the cranks and connecting rods is easy, and with the end plates, containing the main crankshaft bearings, bolted on. The front end plate has an integrally cast housing in which the camshaft gears and the governor are placed, well protected from dirt and damage and thoroughly lubricated. The main bearings are bushed with the special babbit made at the Franklin factory.

The flywheel, at the rear end of the motor, is so formed as to completely house the clutch; the relative positions of these parts are shown in the line engraving. Alternate plates of phosphor bronze and tempered steel form the friction surfaces, and the whole runs in a bath of oil. The manufacturers anticipate that this clutch will run for at least an entire season without attention; and if wear occurs it can be readily taken up by inserting additional plates.

The babbit bushings and other parts freely used about the Franklin cars are made by a die-casting process. Metal dies are used and the castings made under pressure,



GROUP OF BABBITT METAL CASTINGS MADE UNDER PRESSURE FOR FRANKLIN CARS.

the result being a hard, smooth surface requiring no machining, and, the manufacturers state, giving great wear-resisting and anti-friction qualities. The metal dies chill the surface of the babbit, increasing its hardness.

Ignition is by jump spark, there being four coils on the dashboard; batteries supply the current. The timer is of the roller type and is attached directly to the end of the camshaft.

The Franklin motor remains substantially as it was in 1905, and the runabout is unchanged in general design except that the change speed lever is placed inside the line of the frame and in front of the driver, instead of being outside, at the end of the seat. The 12-horsepower touring car is entirely different from the 1905 touring car of the same horsepower. The 20-horsepower car is changed only in detail. The big six-cylinder car is a new machine and the youngest of the Franklin productions. All are well finished, fine looking cars, comfortable to ride in and with an abundance of power in proportion to weight.

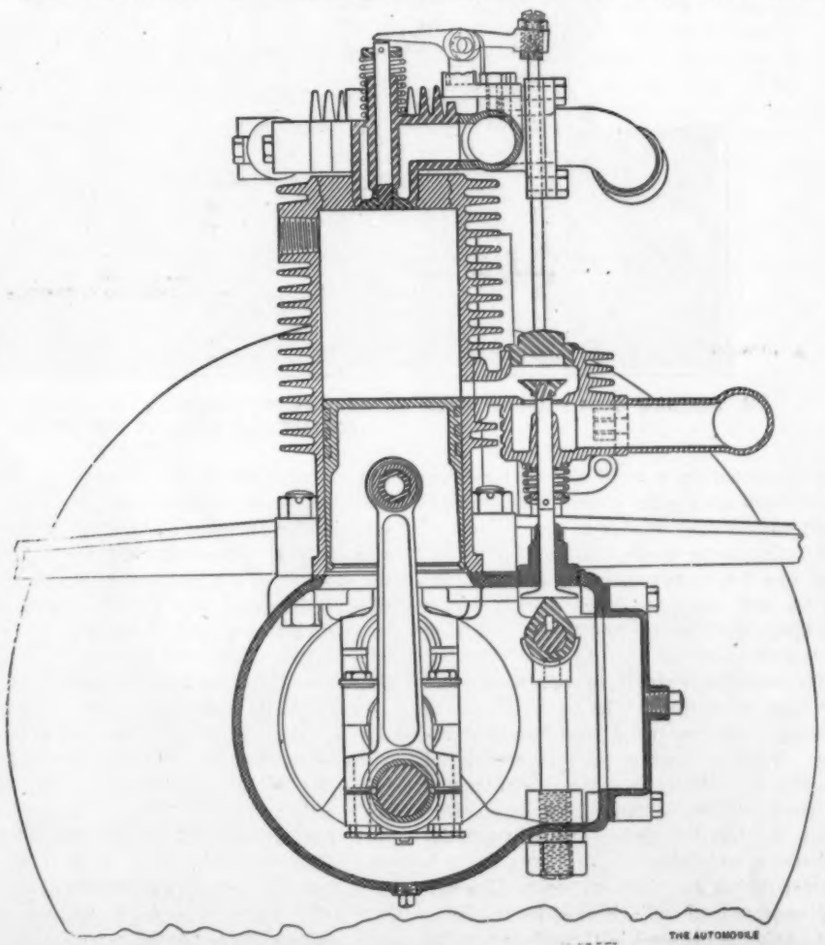
Olds Motor-in-Front Car.

Three cars will constitute the 1906 line of Oldsmobiles, manufactured by the Olds Motor Works, of Lansing, Mich. These will be Model S, a four-cylinder motor-in-front touring car of 24-26 horsepower; Model L, a two-cylinder, two-cycle car, and Model B, a runabout. The largest of these machines, the four-cylinder Model S, which is illustrated herewith, is built on modern touring car lines throughout, having pressed steel framing, water-cooled motor, shaft and bevel gear drive, side-entrance body and other up-to-date features. The dash is of the dished type that is gaining such popularity and the hood is of modern design, being like a Mercedes hood with the top and shoulders flattened.

The vertical cylinders of the motor are cast in pairs, and valves and heads are surrounded by the water jackets. Pistons and cylinders are finished by grinding and are finally worked together to a perfect fit by running from a belt. Bore, 4 1-2 inches; stroke, 4 3-4 inches. Valves are mechanically operated. A convenient arrangement for timing the valves consists of a mark on the flywheel rim and an index on the crankcase, so that if the setting of the valves is disturbed there will be no difficulty in putting the two-to-one gears back in their proper relative positions. Bearings are of babbitt-lined phosphor bronze, of ample size. The crankshaft bearings are hung from the upper half of the horizontally divided aluminum crankcase, so that cranks, connecting rods and bearings, can be examined by taking off the bottom half of the case, leaving all adjustments undisturbed. The cooling system consists of a gear pump forcing water through a flat tube radiator, and a fan in the usual position directly behind the radiator. Jump spark ignition is used, four coils being placed on the dashboard and operated by dry cells, storage battery or magneto, as the user may wish. Accessibility is a feature of the timer, and the spark plugs also are easily reached. Lubrication is effected by an oil pump, which forces oil to the main bearings as long as the engine is running.

The carbureter has an annular float with the spraying nozzle in the center, the level of gasoline in a carbureter of this construction being unaffected by grades, whether the car is tilted sideways or fore-and-aft. The float is free and unattached; when the level of gasoline falls, the float comes down on one end of a small lever, the opposite end of which raises the gasoline valve and allows fuel to flow until the float is lifted off the lever. The ordinary air supply enters under the mixing chamber and rises straight up past the nozzle and through the throttle into the engine supply pipe. An auxiliary air valve, opened by the suction of the engine as it gains speed, takes air from the top of the carbureter, the extra air meeting the regular supply at right angles and becoming thoroughly mixed with it before passing to the engine. Means are provided for adjusting the inlet valve, spray nozzle opening and auxiliary air valve.

The clutch, of the cone type with leather facing, works into a recess in the flywheel;



TRANSVERSE SECTION OF FRANKLIN AIR-COOLED MOTOR. NOTE SUPPLEMENTARY EXHAUST AT BOTTOM OF STROKE CONTROLLED BY MECHANICALLY ACTUATED VALVE.

by means of a spring arrangement the clutch can be let in gradually and without jerking or jumping. A compression grease cup provides lubrication for the clutch when running idle. A three-speed sliding gear transmission is controlled by a single lever of the selective type; the gears are of high carbon steel, hardened and tempered, and, of course, run in an oil bath. The bevel gears through which the rear wheels are driven have a ratio of three to one; three and a half to one or four to one will be supplied on special order.

Two brakes are fitted: the regular service brake, a band and drum on the shaft just behind the transmission gear case is operated by pedal; the emergency brakes, consisting of expanding rings working in drums on the rear hubs are operated by a side lever. The setting of the emergency automatically withdraws the clutch.

The sub-frame, supporting the motor and radiator, and the main frames of the car are connected by part of the dust pan, to which both are rigidly riveted, this arrangement adding considerably to the stiffness of the frame as a whole. Part of the dust pan can be removed for inspecting the motor, and when in place is secure from working loose and protects the working parts from dirt.

The steering gear is of the worm and nut type, with the nut babbitted; thus the bearing surface may be renewed if necessary. Spark and throttle levers are placed beneath the wheel on the right-hand side of the steering column. An accelerator pedal is also provided. The usual pedal operates the clutch.

Steel tubing, two inches outside diameter with quarter-inch walls, is used for the front axle, which is dropped in the center. Steering connections are of large size, lubricated by compression grease cups and protected by leather boots. All springs are semi-elliptic, 48 inches long in the rear and 36 inches long in front. Wheels are 32 inches in diameter and are regularly fitted with 3 1-2-inch tires, though 4-inch tires are supplied on special order. Brackets supporting mud guards and running boards are drawn into taper sockets attached to the frames, so that they can be removed at any time. The car has a wheelbase of 106 inches and a standard tread of 55 inches; on special order, however, the tread will be made either 52 inches or 58 inches. Weight, 2,200 pounds. A horn, two acetylene headlights, generator, two oil lamps and tool equipment go with each car. Batteries, tools and supplies are carried in a box on the running board.

The general appearance of the car is good, the body appearing to be roomy and the lines graceful and harmonious. The manufacturers state that the lines of the underbody are such that very little dust is raised when running.

Royal Tourist 1906 Model Touring Car.

The changes made in designing the 1906 model of the Royal Tourist, manufactured by the Royal Motor Car Co., of Cleveland, O., are comparatively slight, the 1905 car as a whole having shown excellent qualities. In outward appearance the car is considerably improved, being larger and roomier; the lines of the body are more graceful and curves more freely used; and the wheelbase has been increased two inches. The semicircular recessed metal dash with hood and radiator following the same lines, are the same as in the 1905 car, and the general effect is the same. The tonneau is extremely large and roomy and, with deep and soft upholstering, looks very comfortable; the side doors are wide and easily entered.

Mechanically the car is of the same design as the 1905 car. The motor is not changed in any way; briefly, it is of the four-cylinder water-cooled type, with integral heads and water jackets; mechanically operated valves placed on opposite sides of the cylinders; horizontally divided aluminum crankcase with a partition between the pairs of cranks; jump spark ignition with timer on top of vertical shaft driven by one of the camshafts; cylinders cast in pairs; bore 5 inches, stroke 5 1-2 inches; rated at 40 horsepower. Drive is through a leather-faced, spring-backed clutch, three-speed sliding gear transmission, propeller shaft and bevel gears, the rear axle, of course, being of the live type, running on roller bearings. The drop forged crankshaft is finished by grinding and is supported in three bronze bearings. Wrist pins and their bearings are of hardened and ground steel. Openings in the bottom of the crankcase are provided for the examination of the connecting rod bearings; rods can be removed without taking down the motor. The car has pressed steel framing, long, semi-elliptic springs and 32-inch wood wheels, on roller bearings, with 4 1-2-inch tires.

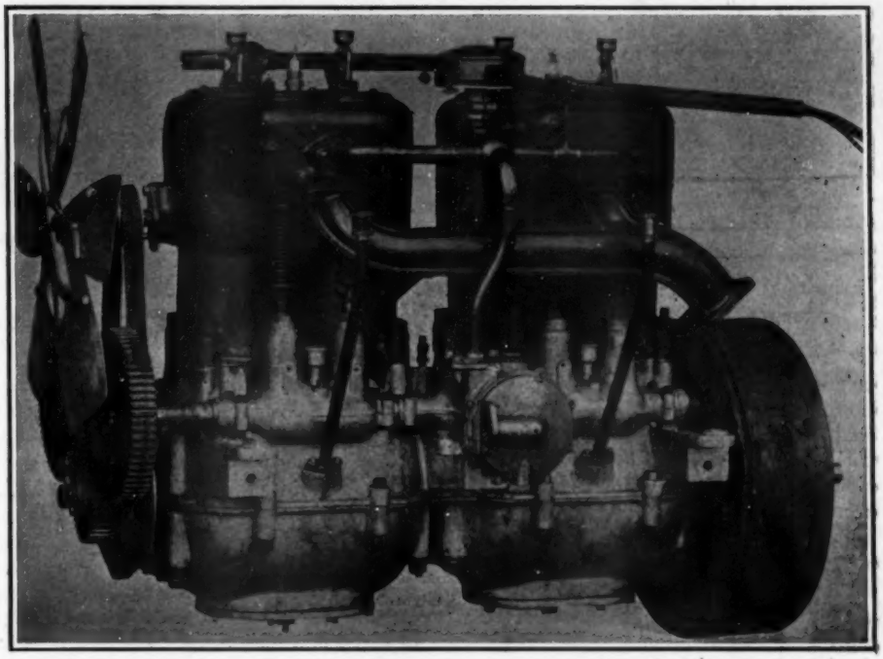
One of the detail changes made is in the warming jacket of the carbureter. The carbureter is of the so-called Mercedes type, with a sliding piston uncovering auxiliary air ports as it is drawn back to speed up. In order to prevent "frosting" from the rapid absorption of heat by the evaporating gasoline, a jacket, piped to the exhaust, was fitted to the 1905 carbureter, and surrounded the mixing chamber only. Even with this arrangement frosting sometimes occurred, and, on the other hand, the carbureter sometimes became overheated. To overcome

THE NEW OLDS FOUR-CYLINDER MOTOR-IN-FRONT TOURING CAR. DWIGHT B. HUSS, WINNER OF THE OLDS TRANS-CONTINENTAL RACE, AT THE WHEEL.

these defects the 1906 carbureter, while unchanged otherwise, is entirely surrounded by a jacket piped to the water system, so that the possibility of frosting is obviated and an even temperature is assured.

A flange is formed integral with the crankshaft and to this the flywheel is securely bolted with fitted steel bolts. A recess is turned in the flywheel for the reception of the clutch, which has been increased in diameter one inch. The thrust is taken by a ball bearing; the leather facing is backed by flat springs which enable the clutch to take hold without "fierceness" and start the car gradually and comfortably.

An important change in the three-speed sliding gear, aside from a slight increase in the width of the gear faces, is that both gear shafts run on Hess-Bright ball bearings. The gears, in common with practically all the parts of the car, are now made in the Royal factory, and extreme care is taken in finishing them. After being cut in the usual modern way from solid blanks and hardened, the gears are accurately ground all over, including the teeth, insuring the truth of the surfaces by removing the effect of any warping that may have occurred during the hardening process. True working surfaces mean smooth running and good wearing qualities, which are of course of great importance in such parts. Shafts are of high carbon steel. The gears are bolted to flanges made integral with the shafts, except in the case of the smaller pinions, which are made integral with the shafts. The diameter of the squared shaft has been increased from 1 1-4 to 1 1-2 inches. The gearcase is split horizontally, as the engraving shows, and has a large hand hole in the top half. The universal and slip joints in the shaft driving system are made unusually large and substantial, and all parts are of hardened steel. A joint is placed between the clutch and the change speed gearcase, so that any slight deviation of the shafts from a true alignment will not cause binding and undue wear in the bearings.

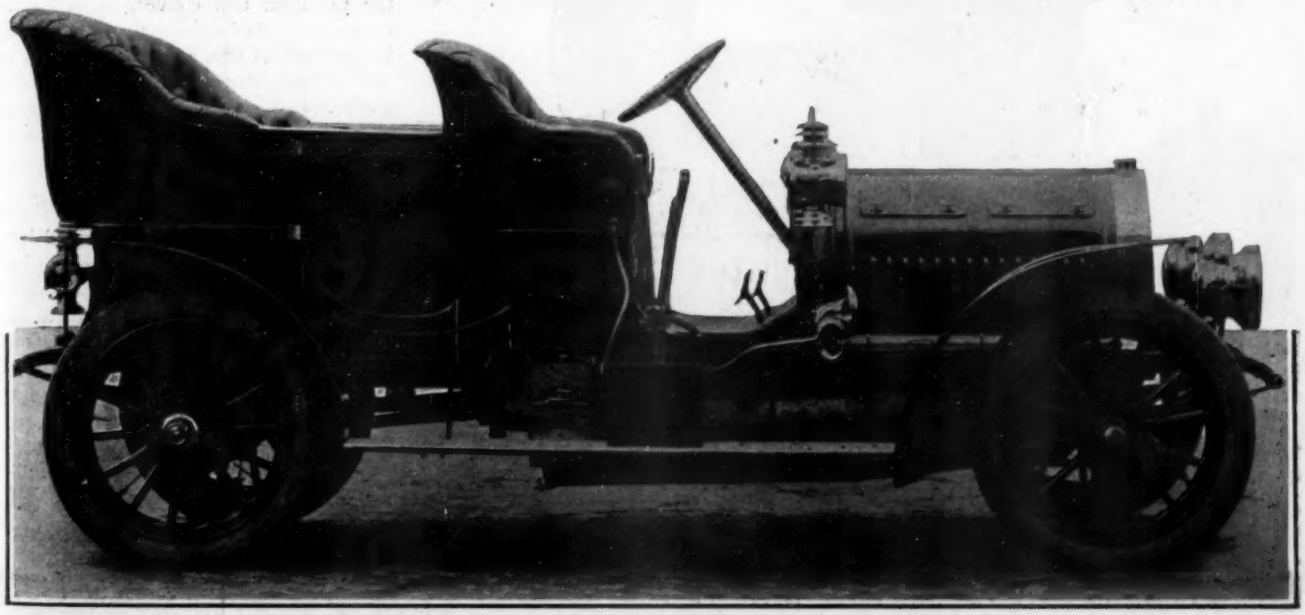


FOUR-CYLINDER MOTOR OF THE ROYAL, 1906 MODEL, WITH CYLINDERS CAST IN PAIRS AND MECHANICALLY ACTUATED VALVES ON OPPOSITE SIDES.

The axles, both front and rear, the knuckles and other steering connections, the driving shafts and other parts subjected to hard work are made, according to the manufacturers, about twenty-five per cent. stronger than in the 1905 car, not, they state, because of the development of any weakness in these parts, but because of the slightly increased all-round dimensions of the car, and because it was thought best to allow an even larger margin for safety, the added weight being very slight. The steering gear has been remodeled and is now of the worm and segment type, powerful and easily handled.

Lubrication is effected by means of a force feed oiler placed on the dash and driven by belt from a pulley on the end of one of the cam shafts; five feeds pass oil through sight glasses on the dash to the thre main bearings of the crankshaft and one feed goes to each of the compartments of the crankcase. Camshafts and cams are lubricated through grease cups.

The cellular radiator is provided with a small water tank on top, and is assisted in cooling the water by an unusually large belt-driven fan. The manufacturers state that the motor will not overheat even if the radiator is but half full of water. Cir-



SIDE VIEW OF THE ROYAL TOURING CAR, 1906 MODEL, FITTED WITH 40-HORSEPOWER MOTOR AND LARGE SIDE-ENTRANCE BODY.

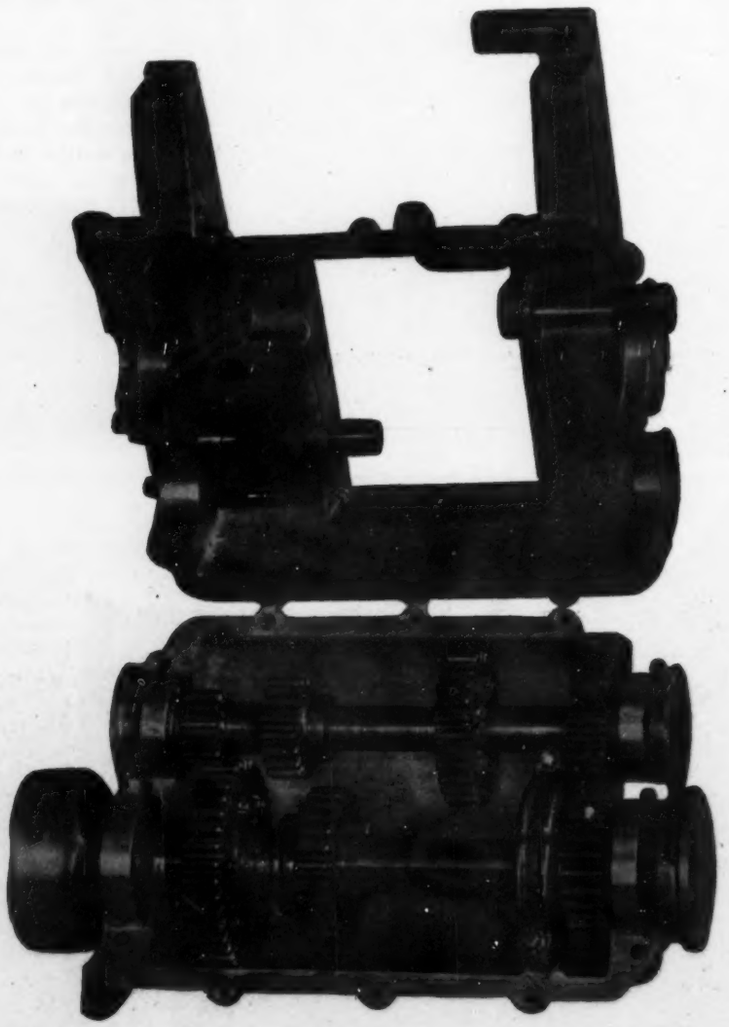
PROPELLER SHAFT AND REAR AXLE CONSTRUCTION OF THE 1906 MODEL ROYAL TOURING CAR. NOTE LARGE BRAKE DRUMS.

culation is maintained by a gear-driven centrifugal pump, the gear on the pump shaft being hardened and the shaft ground true. Drawn tubing is used for the water piping, the tubing being enlarged at connecting points to reduce friction.

Keys are depended upon as little as possible throughout the machine; shafts are squared into sockets; the flywheel and gears are bolted to flanges on their shafts; camshaft gears, in addition to being keyed by the Woodruff system, are drawn up hard on tapers by nuts on the shaft ends. Every precaution is taken to prevent anything from working loose and causing trouble. Wearing parts are of hardened and ground steel wherever practicable, and special steels are used for the various parts.

The decision of the Royal Motor Car Co. to manufacture all its own parts—excepting, of course, radiators, ignition apparatus and the like—has necessitated an extensive enlargement of the plant and the installation of much new machinery. The new machinery has been housed in a new building, 80 feet wide, 120 feet long and two stories high. This, with other improvements, has more than doubled the capacity of the plant in anticipation of exceedingly active work to keep abreast of the demand for 1906 cars.

LEATHER-FACED CONE CLUTCH OF ROYAL CAR.



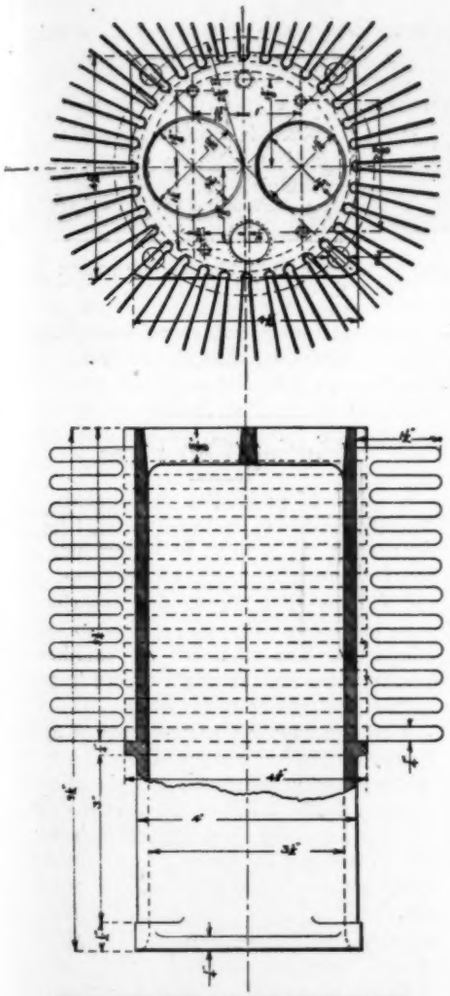
GEAR BOX OF ROYAL CAR WITH COVER LIFTED UP—THREE SPEEDS AND REVERSE.

Trebert Air-Cooled Motor.

The popularity and practicability of the air-cooled explosion motor for automobile use has resulted in the designing of a number of methods of securing a large area for the radiation and convection of heat. A recent method of construction is that adopted by the Trebert Gas Engine Co., of 163 Main street West, Rochester, N. Y., whose air-cooled, four-cylinder motor is illustrated herewith; the line engraving shows the method of inserting the flanges in the cylinders.

The cylinders are cast with walls thick enough to allow holes to be drilled lengthwise from top to bottom. These holes are then opened by slotting from the outside of the casting. Deep teeth are formed in opposite edges of strips of aluminum alloy of a special quality; each strip is then doubled lengthwise so that the teeth form an acute angle with each other. The bend in the metal between the two rows of teeth is of such radius that it can be forced into the slotted hole in the cylinder the base of the double comb filling the hole closely and the teeth of the comb projecting through the slots and radiating from the cylinder. Reference to the engraving will show the method of construction. The four cylinders are

enclosed in a continuous sheet aluminum jacket; at one end of the jacket is a bell-shaped opening, in which revolves a fan, while the opposite end is open for the discharge of hot air. The fan, driven at very high speed by a belt from a pulley on the crankshaft, forces a strong current of air through the jacket and among the teeth radiating from the cylinders; the cylinder heads are cooled by a blast of air blown on



TREBERT SYSTEM OF RADIATING FINS.

them from openings provided for the purpose.

The engine is rated at 16 horsepower at 1,500 revolutions a minute, and has mechanically operated valves opening into the cylinder heads; there are two camshafts, one on each side of the engine, and the valves are opened by long push-rods working through rocker arms. Cylinders have a bore of 3 1-2 inches and a stroke of 4 inches; bearings are of phosphor bronze. Splash lubrication is adopted, a constant level of oil being automatically maintained in the crankcase. With flywheel the motor weighs 225 pounds.

The manufacturers state that a motor of this construction was placed in a car for the purpose of making a test and run hard for six months over all kinds of roads; part of the trying-out process took place during June, July and August, and notwithstanding the hot weather the cooling system gave no trouble.

PACKARD GASOLINE TRUCKS READY TO BE SHIPPED FROM DETROIT TO HONDURAS TO HAUL ORE.

Gasoline Ore Trucks.

Gasoline motor trucks are soon to be placed in service hauling gold and silver concentrates in Central America over a route that is now covered by hundreds of pack mules. The trucks, illustrated herewith, have a capacity of 3,000 pounds each and are manufactured by the Packard Motor Car Company of Detroit, Mich.; three have been shipped to the New York and Honduras Rosario Mining Company at Lorenzo, on the Pacific coast of Honduras, and on their arrival will be placed in service between the gold and silver mines at Tegucigalpa, the capital of Honduras, and San Lorenzo, a distace of ninety miles. The trucks will carry their loads of concentrates to San Lorenzo and will return to the mines with miscellaneous freight—stores required at the mines. It is expected that each truck will do the work of no less than seventy-two mules. Each mule carries 250 pounds slung across his back in two sacks of 125 pounds each, and a mule train requires an average of six days to travel the ninety miles, the time occupied depending a good deal on weather conditions. Each truck will carry 3,000 pounds, the loads of twelve mules, and will make the ninety miles in one day, or six times as fast as the mules. The cost of operating the trucks will be carefully recorded, so that comparisons can be made with the primitive pack train.

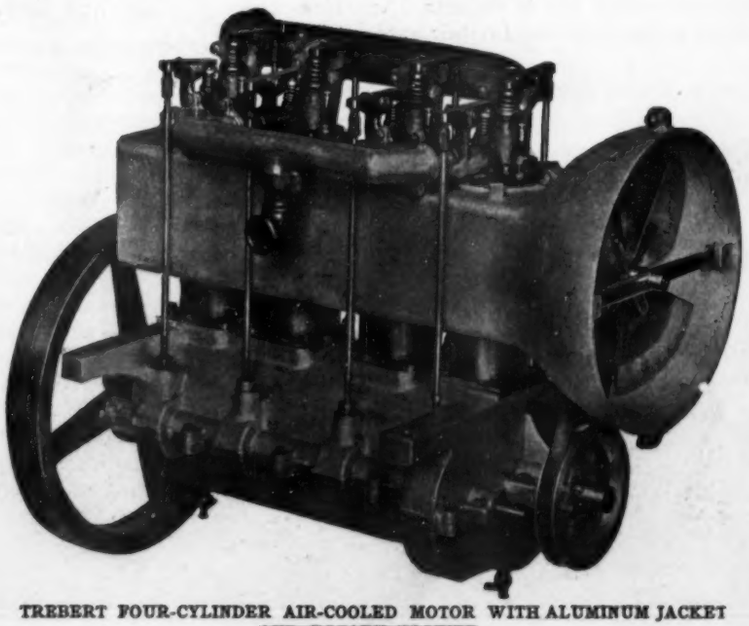
The road traversed has been put in good condition, the Government of Honduras having spent more than a million dollars on it during the last five years; there are no grades steeper than 10 per cent. The gasoline supply will be stored underground in drums of 100 gallons each; there will be a battery of five drums at each gasoline station along the road, the drums all piped to one pump with a lock valve. It is interesting to note that gasoline costs twenty cents a gallon in Honduras, no more than in some parts of the United States.

The gold and silver concentrates will be shipped to New York and will be smelted and refined in large refineries in the East.

His Job Below.

The Latest Shade—When on earth I was an automobilist.

His Satanic Majesty—Ah! then please be kind enough to crawl under that furnace and see what's the matter with the grate; it seems to be klinked up.—Milwaukee *Wisconsin.*



TREBERT FOUR-CYLINDER AIR-COOLED MOTOR WITH ALUMINUM JACKET AND ROTARY BLOWER

Oldsmobile Meeting.

An unusual as well as interesting event was the Oldsmobile meet held at the Empire City Track, New York, on election day, November 7, in which all owners of Oldsmobiles were invited to participate. General Cutting of the New York Oldsmobile Co., planned the meet and carried it through to a successful finish.

More than sixty Oldsmobiles gathered at the starting point, the Oldsmobile headquarters on Broadway, and paraded to the Empire City track, where the drivers fortified themselves against the afternoon's sports by partaking of a luncheon. After this the drivers who felt like driving faster than the legal limit took part in races on the fine mile track that has been the scene of so many stirring races between fast cars, American and foreign.

REUNION OF OLDSMOBILE RUNABOUT OWNERS AT EMPIRE CITY TRACK, NOVEMBER 7.

A feature of the program was a trial against time by Mrs. Joan Newton Cuneo, who drove her stripped White steam car for the mile record for women. She made two attempts to reduce her previous best record of 1:22. In the first she covered the mile in 1:20 3-5, and in the second her time was 1:15 flat—a new American record for a car driven by a woman.

Another special event, and one that was the cause of much interest, not to say excitement, was a drawing for an Oldsmobile runabout of the 1906 model. The winner was James Durand, a 19-year-old student of De La Salle Institute, New York, and the car was presented to him on the spot.

The races held during the afternoon were decidedly interesting, largely on account of the fact that the cars were all of the same make, so that superior speed was due to condition and handling. A gymkhana race was especially lively, both for the spectators and the participants. The cars were lined up "dead" and the drivers retired to a distance of twenty feet in the rear. At the starter's signal all ran to their cars, cranked the motors and started; but a full stop had to be made at the end of each quarter of a mile. An excellent rule made was that the winner of a race could not take part in other races.

Following is a summary of the events:

One mile, runabouts only—Won by H. B. Hutchinson, Hempstead, L. I.; Freeman Munroe, New York, second; F. Holbrook, Yonkers, third. Time, 2 minutes.

One mile touring cars—Won by F. Iverson Taylor, Mount Vernon. Time, 2 m. 40 3-5 s.

Gymkhana race, one mile—Won by F. Holbrook, Yonkers; A. Katz, New York, second.

Half mile—Won by C. E. Ross, Moriches, L. I.; J. E. Mitchell, New York, second.

Quarter mile, backward—Won by N. S. Seeley, Flushing; F. Iverson Taylor, Mount Vernon, second.

Two miles—Won by James E. Mitchell, New York; A. Katz, New York, second. Time, 5 m. 6 2-5 s.

One mile exhibition—Mrs. Joan Newton Cuneo, Richmond Hill, L. I. First trial, 1 m. 20 3-5 s. Second trial, 1 m. 15 s.

MRS. J. N. CUNEO IN HER WHITE STEAMER—HOLDER MILE RECORD FOR WOMEN.

Putting Out Fires.

A series of interesting experiments was recently conducted by the Touring Club of France for the purpose of determining the relative merits of various substances used for extinguishing fires; the experiments were made especially with a view to ascertaining the best substance for smothering gasoline fires such as might occure in automobiles, garages or motor boats.

A trough having a surface area of about sixteen square feet was placed under a forge chimney, and in the trough was placed gasoline to a depth of 7-16 of an inch; the gasoline was then ignited. On the fiercely burning surfact was thrown powdered ammonia salts, but the result was nil, though the salts were used in abundance. After the gasoline had burned out the trough was cleaned, the supply of gasoline renewed and again set on fire. This time the same salts were dissolved in water in the proportion of thirty parts of the salts to seventy parts of water. The hydrochloride of ammonia was sprinkled over the burning surface, and in a few seconds a thick substance was seen floating on the surface of the gasoline and the fire was instantly checked. Small flames, however, continued to rise along the edges of the trough, owing to the fact that the covering of thick substance was unable to make perfect contact with the walls of the trough.

Other experiments were conducted along the same lines, and the following conclusions reached: Ammonia salt is the best substance to use for smothering gasoline fires, not only because of its efficiency in extinguishing the flames, but also because it is a common and easily obtained chemical. The salt is of no use solid or even powdered. To obtain the best results a solution of thirty-

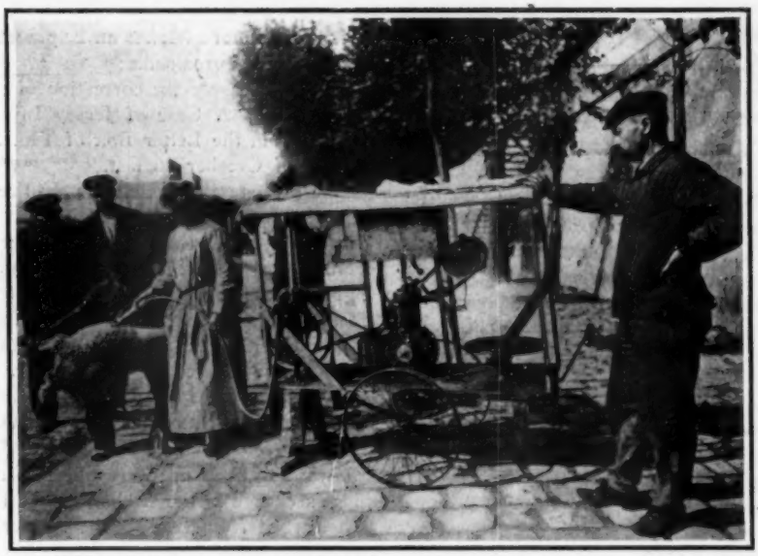
five parts of the salt to sixty-five parts of water should be used. In case of emergency milk may be used, fairly satisfactory results having been obtained with this fluid.

Testimonial to R. L. Morrell.

Robert Lee Morrell, chairman of the racing board of the American Automobile Association, was tendered a dinner at the Waldorf-Astoria, New York, in appreciation of his management of the Vanderbilt cup race in particular and his good work in the interest of automobiling generally. The event took place on Thursday evening, November 9, and was attended by many prominent automobilists. During the banquet Mr. Morrell was presented with a bronze group by Carpeaux. E. E. Schwarzkopf, who was the moving spirit of the affair, acted as master of ceremonies and made the presentation with an eulogistic speech, to which Mr. Morrell responded appropriately. Then all the guests took turns in making speeches, each being limited to three minutes. Windsor T. White placed himself on record as believing that a track or private speeding road of considerable length should be built on which automobiles could be tried out at speed for as long a time or as great a distance as might be deemed necessary or desirable, without interfering with the ordinary use of the public highways. Such a track, if of sufficient length, Mr. White believes, would be extremely desirable. All the speeches were highly complimentary to Mr. Morrell. C. H. Gillette's contribution was a song, composed by himself and sung to the tune of "Tammany," all the guests joining in the chorus.

Those present included Robert Lee Morrell, Winthrop E. Scarritt, Robert Graves, A. R. Pardington, Asa Goddard, S. A. Miles, Augustus Post, W. T. White, E. R. Hollander, A. G. Batchelder, S. T. Davis, E. E. Schwarzkopf, C. H. Gillette, Peter Fogarty, H. M. Swetland, A. de Magnin, A. Massenat, G. M. MacWilliam, A. J. Picard, Alfred Reeves, John C. Wetmore, W. H. Harrison, R. B. Johnson, R. H. Johnston, W. E. Baldwin, Louis R. Smith, E. D. Winans, F. J. Wagner and C. Page. William K. Vanderbilt, Jr., and Foxhall P. Keene, who were among the subscribers to the testimonial, sent letters of regret, at the same time expressing their warmest appreciation of Mr. Morrell's services in the cause of automobilism.

BRONZE STATUETTE PRESENTED TO R. L. MORRELL AT BANQUET, NOVEMBER 9.



UNIQUE OUTFIT USED BY ITINERANT DOG CLIPPER IN PARIS.—The Small Air-Cooled Motor Operates the Clippers Through a Flexible Shaft, but the Cart Has to Be Pushed by Hand.

GOLD MEDAL FOR ROBERTS.

PHILADELPHIA, Nov. 13.—On Thursday last the Philadelphia Automobile Dealers' Association, at a special meeting held at the Hotel Hanover, voted to award a handsome gold medal to Mortimer Roberts, who, at the association's race meet at Point Breeze track, on November 1, broke the track record. Mr. Roberts drove his 60-horsepower Thomas Flyer five miles in 5:11 3-4, breaking not only Barney Oldfield's best previous record (5:28 3-5) for the distance, but creating new figures for the intervening miles as well.

An effort is to be made to bring Roberts and Oldfield together at Point Breeze track on Saturday, November 25, for a substantial purse. The distance is to be five miles, the contestants to start from opposite sides of the track.

It was also definitely decided to hold the association's hill climb on one of the several roads which go over Chestnut Hill. The exact date and course will be decided upon at a meeting to be held during the week.

Paris Garage Charges.

PARIS, Nov. 4.—The *Chambre Syndicate de l'Automobile* has done a useful work in drawing up a uniform tariff of garage charges, which has been adopted by nearly all Paris firms. The prices are as follows:

GARAGE ONLY.

Per day	$ .50
Per month—	
Cars 118 ins. long	6.00
Cars 118 ins. to 157 ins. long	8.00
Cars above 157 ins. long	10.00
Private stall, per month	14.00

WASHING OF AUTOMOBILES.

Per day	.50
Per month—	
Cars 118 ins. long	6.00
Cars 118 to 157 ins. long	8.00
Cars above 157 ins. long	10.00

CLEANING BRASS WORK.

Per day	.50
Per month, according to private agreement.	

GARAGE, WASHING AND CLEANING BRASS.

Per day	$1.20 to $2.00
Per month	20.00

LOCKERS.

Per month, according to dimensions	$1.00 to 2.00

SUPPLY OF WATER.

(When mechanic washes car himself.)

Per month	$2.00

All charges are payable in advance. Customers taking advantage of this tariff are expected to buy their gasoline, oil, tires and accessories at the garage. A charge of $4 is made for trial runs of second-hand cars in Paris, and $8 for a run to Versailles or Saint Germain (return journey of about twenty miles). These sums must be paid in advance, but are reimbursed if a sale is effected.

Letter Box

Cost of Delivery by Auto.

Editor THE AUTOMOBILE:

[287.]—Enclosed find copy of a letter from the Joseph Horne Company, of Pittsburg, Pa., giving the results of their experience with an Oldsmobile delivery wagon. From the time the car was delivered to them until the present it has not been approached by anyone connected in any way with the Olds Motor Works, the investigation being conducted entirely by the owners in the ordinary course of their business. We think you will agree with us that the showing is a remarkable one.

Detroit. B. & H.

Olds Motor Works.

As agreed by us at the time of purchasing one of your Olds delivery cars to give you a record of the same, we beg to hand you herewith the figures. The machine, as you know, was delivered to us on July 10 and went into commission on July 11. The following statement covers the period from that time to the first of October—sixty-five days.

RECORD.

	July.	August.	Sept.	Totals.
Cost of material	$ .55	$3.05	$3.92	$7.52
Factory change at 50c. per hour	7.00	2.75	4.62	14.37
Machine oil at 11c. per gal	.22	.22	.22	.66
Engine oil at 17c. per gal	.92	.92	1.16	3.00
Gasoline at 10c. per gal	11.27	14.49	17.22	43.98
Totals by months	$20.56	$21.43	$27.14	$69.13
Packages delivered	2,772	2,276	3,156	8,204
Miles run	468	715	633	1,816
Trips made	33	47	50	130
Trips lost	0	0	0	0
Average cost per package	$.0074	$.00941/2	$.0086	
Average cost per mile	.044	.030	.043	
Average cost per trip	.623	.456	.543	
Average cost per package for full period				$.00841/2
Average cost per mile for full period				.038
Average cost per trip for full period				.532

You will notice that in August the machine covered more miles than in September or July, yet delivered fewer packages. This was due to the fact that we changed it twice a week to different routes and mostly to the furthest outlying ones, which are not so heavy in packages as in mileage to cover. This machine has also covered our most hilly routes with success, having at no time refused to take any and all grades on any and all routes we have. We are so well pleased with this machine that, as you know, we have ordered another and hope to give you further orders next spring.

We have given you the data just as we took it from our books. We would like to ask if you have detailed reports from others using this machine, as we should like to compare our figures with them.

JOSEPH HORNE COMPANY.

Pittsburg, Pa.

Mr. Rushmore Makes an Explanation.

Editor THE AUTOMOBILE:

[288.]—Please make correction of the article headed "A Case of Jersey Injustice," appearing in the Letter Box of THE AUTOMOBILE of October 26 last.

The first statement that Mr. Justice Fort referred to, in charging a jury at New Brunswick, stated that he doubted that automobiles had any right whatever upon the highway, was made on the strength of newspaper publications only. I now find that the judge never made any such statement at New Brunswick or anywhere else. The source of my present information is such as to admit of no question. The newspaper reports were entirely erroneous..

I was mistaken in my recollection of the judge's charge in the Addis case, as I have just learned from reading the transcript of the stenographer's notes. From this transcript it clearly appears that the judge instructed the jury that there could be no verdict against me unless negligence on my part was shown, and not then if the plaintiff's negligence in any manner contributed to his injury.

With reference to the law of the road, the charge points out that the legislature has expressly provided that bicycles shall be subject to the ninety-first section of the Road Act, but that no similar statute has made automobiles expressly subject to that act.

I was also mistaken in my recollection of the charge respecting the right to be on the left side of the road to avoid accidents. On that subject the printed charge reads:

"Now, gentlemen, you know what the proof is as to the character of this locality where he was traveling. Was he running at a rate of speed which was not reasonable and proper, not exercising reasonable care, in that place, at the time this accident happened? Was the automobile being operated carelessly on the left-hand side of the road, when it should have been on the other side of the road, if it should have been there or might have been there? That is a question of fact for you. You have heard the evidence as to whether he could have been there or whether it was negligence for him not to be upon the right-hand side of the road. That is all for you; I am not going to discuss that."

I still think that the verdict of the jury was contrary to the weight of the evidence, and that the jury was unconsciously influenced by the public prejudice against automobiles; but a careful reading of the notes of the trial shows that what I said under the excitement produced by what seemed to me to be a wrong verdict, was unwarranted, and I now, within a half hour after learning the facts, write and sign the foregoing and request that you give it as much publicity as was given the original article. I regret that I fell into the errors referred to, and now, as my plain duty, I humbly apologize to the learned judge. S. W. RUSHMORE.

Plainfield, N. J.

A French inventor has brought out a very practical and ingenious device for heating the steering wheel in winter driving, based on the slow cooling quality of caustic soda. In one form the entire rim of the steering wheel is of metal and hollow, it is filled with crystals of caustic soda through several apertures, which are then closed by tightly-fitting screw plugs or by soldering until the receptacle is hermetically sealed. When required for use in cold weather the wheel is placed bodily in a vessel of hot water and allowed to stand for a time until the soda is thoroughly heated; after which it will give off a moderate heat for a period of from five to twenty-four hours. In another form the rim of the wheel is of flat metal encased in the usual way with wood, but on the upper side of the rim the wooden segments are partly cut away, being replaced by hollow metal castings of semicircular section, held in place by bolts and nuts. These castings are filled with caustic soda as before; they may be removed from the wheel and immersed for a time in hot water. When replaced, the rim at two points on opposite sides is of wood, a nonconductor; at the other points on opposite sides is the heated metal.

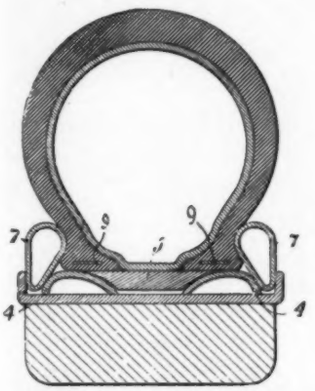
When Congressman Brownlow, of Tennessee, introduced what has become known as his good roads bill, some well-meaning people looked upon it as a visionary proposition; others as a constitutional innovation, and still others as a something calculated to bankrupt the national treasury. A little thought on the subject discovered that it was none of these, but one of the most practical and important economic measures ever submitted in the House of Representatives. Following the Brownlow bill there came two bills from the Senate—from Senators Latimer, of South Carolina, and Gallinger, of New Hampshire—and two or more in the House. The bills are similar in their provisions, what is known as the Brownlow-Latimer bill being recognized as covering the provisions of the others. It is believed that during the life of the Fifty-ninth Congress, soon to convene, the bill will be enacted into law.

Patents

Pneumatic Tire.

No. 802,703.—J. Midgley, of Columbus, O.

A tire held in place against slipping by the internal pressure of an expansible rim.



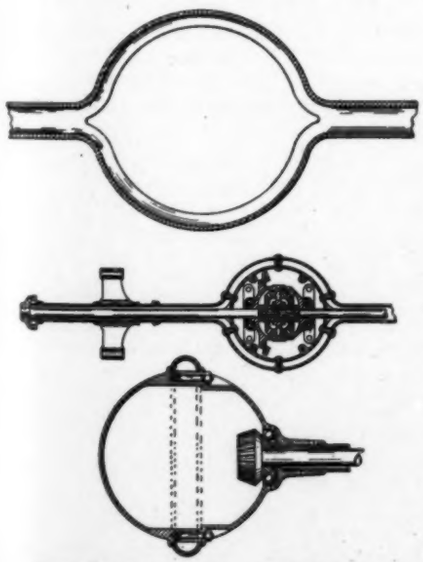
MIDGLEY PNEUMATIC TIRE.

In the drawings, *9 9* are metal rings which prevent the base of the shoe from stretching. Ring *5* is cut at one or more points and is expanded by forcing rings *3 3* inward toward the centre of the rim. To force these rings, the rings *7 7* are cut and contracted by turnbuckle screws, thus tightening them and shifting *3 3* by virtue of their wedge-shaped section.

Axle Construction.

No. 803,121.—F. C. Miller, of Cincinnati, O.

A simple construction for the rear axle of a bevel-gear drive car. The axle sleeves are made in one piece, which in the middle



MILLER REAR AXLE CONSTRUCTION.

is split horizontally and opened as shown in section in the first drawing. The differential casing bevel gears, and differential are then assembled as shown in the two lower views, the live shafts being inserted from the outer ends of the sleeves after everything else is in place. Access to the gears is had by unbolting and removing the rear half of the spherical differential casing.

Crank Case Lubricator.

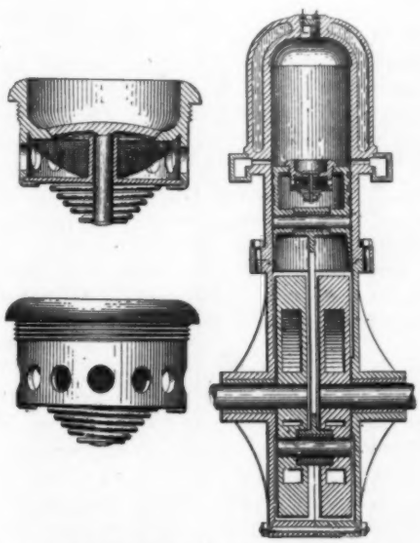
No. 797,046.—H. Casler, of Canastota, N. Y.

The oil is fed from an airtight tank through a tube, the lower end of which dips into a cup communicating, above and below the oil level, with the crank case. Thus the oil level in cup and crank case is determined by the lower end of the tube, from which no oil can escape till air gets in through the tube to take its place.

Two-Cycle Engine.

No. 803,078.—H. E. Thompson, of Chicago, Ill.

In this engine the charge compressed in the crankcase is transferred to the cylinder



THOMPSON TWO-CYCLE ENGINE.

through a spring-closed poppet valve in the piston head. Exhaust apertures are made at intervals all around the cylinder, communicating through a common passage with the exhaust pipe; and the transfer poppet valve in the piston head opens automatically when the pressure above it is released. The especial feature of the invention is the use of a wire gauze screen below the valve, whereby the inventor claims that premature ignition of the transferred charge is prevented.

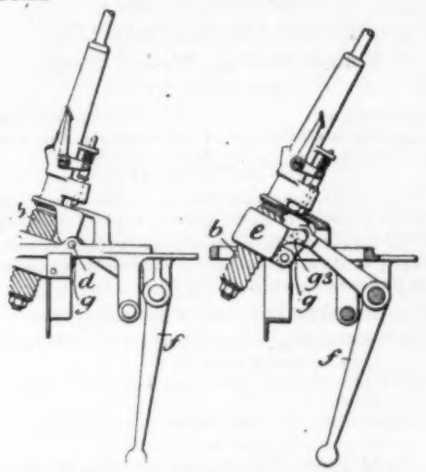
Frame Construction.

No. 800,915.—E. R. Hewitt, of New York.

A construction for cars having a horizontal engine under the body. It consists in providing an inner frame in which the motor and speed-changing gear may be mounted and lined up, the frame being then bolted into the main frame. The inventor prefers to support the inner frame on two side swivels located about in the middle of the main frame, and to connect it to the other two bolts by spring plates, thus giving a somewhat elastic support.

Tilting Steering Column.

No. 802,356.—F. A. Law, of Hartford, Conn.



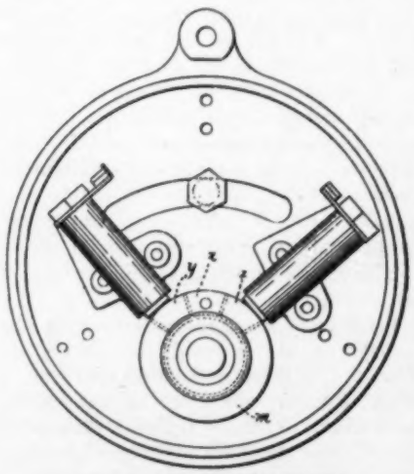
LAW TILTING STEERING COLUMN.

The column is pivoted at *d*, and the nut *e* on the steep-pitch screw *b* is connected to the bell-crank forging *f* by a link *g*. The ears g^3 prevent *e* from turning. When the lower pivot pin of *g* is in line with *d*, as in the right-hand view, the steering wheel does not require to be turned to tilt the column, and only a slight turn is needed in any case.

Spark Timer.

No. 801,850.—L. S. Chadwick, of Ridley Park, Pa.

A timer in which the usual fibre ring, with grounded metal segment, is replaced by a metal ring *m*, insulated from the shaft, with an inserted segment *x* grounded as usual. To prevent the current from being carried from one brush to the other by the ring *m*, when one or the other brush is in



CHADWICK IGNITION TIMER.

contact with both *x* and *m*, segments *y z*, insulated from both *x* and *m*, are inserted. The purpose of the invention is to prevent the uneven wear which occurs with the usual form of timer.

THE AUTOMOBILE

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Proposed New French Regulations. A world-wide interest attaches to whatever action the commission appointed by the government of France may take in modifying the automobile regulations of that country. France has been a pioneer in the construction and use of machines, and has, without doubt, done more to establish precedents in automobilism than any one other country. It appears probable that among the new regulations will be one setting an arbitrary age limit for the drivers of certain classes of vehicles, graded according to horsepower. Thus, any one below the age of sixteen will not be permitted to drive a car suitable for general work, and below eighteen will not be permitted to drive a car of more than thirty-five horsepower, while an unlimited permit will be granted only to those who are of age.

It is difficult to see any sound reason why a youth of twenty would be allowed to drive a thirty-five-horsepower car and a youth of twenty-one a car of, say, ninety horsepower. Possibly national custom in such matters may have its influence. More readily understood is the proposed examination of the candidate for a driving certificate to demonstrate his ability to handle a machine. This has often been advocated here, but is open to the objection that the beginner would be compelled to learn to drive without legal sanction, for learn somehow he must, or else he could never pass the drivers' examination.

In a conference, M. DARRACQ made some sensible suggestions to the commission. He pointed out that official France had at first treated automobilists very liberally, and was gradually becoming reactionary. He pleaded for the abolition of all speed limits, including the thirty kilometer limit, in the open country, which was practically impossible of enforcement against a machine whose *raison d'être* was that it could travel faster than thirty kilometers an hour.

If the legislators and public could only see it, the most sensible speed regulation would be a single one prohibiting furious driving. This would place the responsibility squarely on the driver, who would be compelled to exercise judgment and consideration at all times. Under speed limit laws, the temptation is to feel that obedience to the letter of the law is sufficient, and that compliance with the speed law confers on the driver certain privileges as against other road users.

The other suggestion is a most interesting one. It is only as an improvement over previous methods of locomotion that the automobile is an acceptable addition to the complexity of modern life. Had it no greater speed capacity than the horse-drawn vehicle, what would it amount to? Why limit its time-saving qualities by restrictions founded almost wholly on ages of familiarity with the slow-moving horse?

But the age of enlightenment in automobilism is not yet. Missionaries in the cause have much work to do.

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Advantages of Interchangeability. The average automobilist, in his discussions of matters pertaining to the automobile, usually misses a point that is of especial interest to the American—the benefits the automobilist derives from the use of automatic machinery in making the parts of his machine. In practically all American cars the parts are interchangeable, so that the automobilist, if he breaks a part, perhaps in some section of the country remote from a repair shop, can telegraph for a new part and know that when received it will fit as did the original one, and will not require "tinkering" or fitting. That the advantages of this system of interchangeable parts are recognized abroad is shown by the fact that a great deal of American automatic and special machinery is being installed in foreign plants, where hand work is much more common than in this country. The advantages of interchangeability of parts go far toward offsetting the advantages gained by the use of superior material which will stand harder usage, but cannot be replaced when broken or damaged without shopping the car and having the part hand-fitted at the cost of considerable delay and outlay of money.

The old-fashioned idea that there is nothing so good as hand work does not hold good under these circumstances, and the use of automatic machinery is not only improving American automobiles generally, but is making them more easily repaired and more uniform in quality. In this respect there is a decided advantage over hand-finished cars, no two of which can be exactly alike; a slight inaccuracy in the fitting of an important part, such as a piston or piston rings, makes a great deal of difference in the running of the machine. Cars built on the interchangeable plan are as nearly alike in every respect as possible; what one car will do, another of the same model will do.

The American manufacturer has made good use of the readiness of the machine tool maker to supply machinery specially designed for special work, and the further development of this system, together with the improvement of the quality of raw material, should do much to bring the American car to the front.

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News of the death of CLARENCE GRAY DINSMORE, last week, greatly shocked his wide circle of personal friends and acquaintances, and the wider circle of automobile enthusiasts in all parts of the country who had come to appreciate the personal qualities of this fine American sportsman by report. Though he had not been in robust health in recent years, he was still in the prime of life and one of the most active figures in the world of automobile sport. For years the official representative of the Automobile Club of America in Europe, he had come to be looked upon as the ambassador of American automobilists to the representative bodies abroad, and for this position he was peculiarly well qualified, not alone in his tastes but his personality. Combining in a high degree personal dignity with geniality of disposition and democracy of manner, he fitly represented the United States in Europe, and it will be no easy matter to find a worthy successor who can devote the necessary time to the purely honorary functions of the office. As an owner of notable racing cars, and a liberal supporter of high-class contests, MR. DINSMORE was known to a large section of the general public. In his death a fine type of American sportsman has passed away, and the whole automobile world is the poorer to-day.

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It is of particular interest to automobilists to know that the returns on the constitutional amendments voted on in New York state on November 7 show that the proposal to enable the State to issue bonds to the amount of $50,000,000 for the improvement of the highways received large majorities in its favor, especially in the "up-state" counties. The next legislature has now to pass the measure authorizing the bond issue. It is expected that the work will be completed in ten years, the $50,000,000 representing the state's portion (one-half) of the total cost of the improvements.

Transcontinentalists Arrive in Portland.

Telegrams received last Friday in the East announced the arrival in Portland, Oregon, of Percy F. Megargel and Fassett in the Reo *Mountaineer*. It took them six days to cross the Cascade mountain range because of fallen trees, deep snow, steep grades that exceeded 30 to 40 per cent. for long stretches and rough roads.

As hotels and grocery stores were frequently fifty to seventy-five miles apart, the two men were obliged in one instance to go thirty-six hours without food.

Despite the hard going from Cheyenne to Portland, the car is in good order and will leave the exposition city in a few days on its return trip to New York by way of San Francisco and the southern route through Utah and Colorado.

The following letter from Mr. Megargel to THE AUTOMOBILE relates some of his experiences in northern Oregon:

WAPINITIA, ORE., Nov. 5.—Within 100 miles of Portland but with the snow-capped, log-bestrewn trail over the Cascades separating us from that city, we may yet be several days distant. The roads for the last 300 miles have been over a series of mountains and hills down on the state map as the Multon Mountains. We have had our brake linings on fire several times as mile after mile downhill has been rolled off with no levels or up-grades. We have climbed grades where our gradometer has shown 22 per cent. uphill and have worked with jack and lever to get the car over monster boulders that have blocked the path. Now one supreme effort, the crossing of the dreaded Cascades, and we shall be in Portland.

The Santaim pass, over which the two Olds journeyed on their recent transcontinental race, is blockaded with snow twelve feet deep, and after a fruitless effort to effect a passage we were obliged to run fifty miles to the north and take the Barlow pass, which is so filled with fallen logs and boulders that even an emigrant wagon has to carry bucksaw and axes in order to get across. This is what is ahead of us now.

Our muffler was torn off by rocks on a steep down grade this afternoon and the usually quiet car can now be heard for half a mile as it goes through the huge forest of Oregon fir trees.

To get over the Barlow pass to-morrow it will be necessary to saw our way through many trees, some of them two and some even three feet in diameter, build up a road so the car can straddle huge boulders, and then, when we get across the mountain, pay $3 toll for the privilege of going over the road.

All day to-day we have passed Indians on the road, while their shaggy little piebald ponies crowded every mountainside throughout the reservation.

LAW'S POINTS ILLUMINED.

Attorney General's Office Explains Provisions of Pennsylvania's New Act.

PHILADELPHIA, Nov. 13.—Requests for information as to the exact meaning of various provisions of the new Pennsylvania automobile law have been pouring into the office of the State Highway Department in such numbers that last week the Attorney General's department was asked to give an opinion upon a number of cloudy points. This opinion was made public last Friday, and while some of the points were made clear, others were overlooked, so that further enlightenment will doubtless be asked for.

The opinion was handed down by the deputy attorney general, and opened with the statement that the new law abrogates all former acts upon the subject. Motorcyclists will be annoyed to learn that not alone must they secure licenses, and carry front and rear tags, but that, like automobiles, their machines must carry a light to illuminate the rear tag at night. Another point cleared up by the opinion was that while in Pennsylvania no automobile or motorcycle operator can lawfully display on his machine a tag issued by another state.

There still seems to be some doubt as to whether the new law will compel every person operating a car to secure a license or whether a chauffeur may operate a car on his employer's tag. The officers of the local organization of chauffeurs insist that the former is meant, and that the clause covering this point was especially designed to keep irresponsible persons from handling automobiles—an interpretation favored by the better class of owners.

Although many of the inquiries asked for information as to whether the automobile bureau of the Highway Department will open branch offices in the larger cities of the state, such as Philadelphia, Pittsburg and Scranton, nothing was vouchsafed in the way of enlightenment, as such a course would mean the expenditure of considerable money, and as the last legislature made no appropriation for that purpose, it is reasonable to suppose that the opening of such sub-offices is not contemplated. It is pointed out that the state authorities could designate some municipal department in each of the large cities to issue licenses and tags, and perhaps some such plan may be adopted to accommodate the 80 per cent. of the state's automobilists who, it is claimed, live in the big cities.

A. M. L. DANGER SIGNS.

The American Motor League is performing an excellent service, and one that will be particularly appreciated by tourists, in the placing of danger signs in many parts of the country at points where reduced speed and extra care on the part of automobilists is essential to safety. Each sign is about 30 inches square and is set cornerwise on its post. The word "Danger" is painted in heavy black letters on the board with an arrow beneath pointing in the direction of danger. The League asks the aid of all automobilists in the placing of these signs where necessary.

COLISEUM TOO SMALL FOR SHOW.

CHICAGO, Nov. 11.—The Coliseum is too small for the automobile show which is to be held there in February, and it is probable that the First Regiment Armory will have to be used as an annex. In this way alone will it be possible to accommodate all the concerns that have made application for space. The Coliseum has 56,000 square feet of floor space, but only about 38,000 is available for automobiles, and there are to date applications for upwards of 69,000 square feet for automobiles. The remainder of the space in the Coliseum is to be used for accessories. Should the armory be used as an annex there will be ample room for everybody.

The armory is in the same block as the Coliseum, but is separated from it by the Illinois Central railroad tracks. It stands at the corner of Sixteenth street and Michigan avenue, at the south end of "Automobile Row," while the Coliseum fronts on Wabash avenue (one block west of and parallel to Michigan) near Fourteenth street, Fifteenth street is not cut through the block. The armory is a brick and stone building, rebuilt after a fire about ten years ago. It has a large open floor space.

CHAIN MAKERS MEET IN CHICAGO.

CHICAGO, Nov. 11.—The leading chain manufacturers of the country have been holding secret meetings at the Auditorium during the past few days. Although they will not discuss for publication the subject of their deliberations, it is rumored that a combination is being formed. Among the visitors who have been staying at the Auditorium are F. S. Gates, president of the Baldwin Chain Co., of Worcester, Mass.; L. N. Wainwright, president of the Diamond Chain Co., of Indianapolis, Ind.; Clarence Whitney, president of the Whitney Chain Manufacturing Co., of Hartford, Conn., and others.

JAMAICA TOURING CAR SERVICE.

BOSTON, Nov. 13.—As the result of negotiations which were instituted by steamship and hotel companies interested in the development of the island of Jamaica as a winter resort, President Kenneth A. Skinner, of the Boston Automobile Dealers' Association, and one of the veterans in the local trade, is making arrangements to sail for Jamaica in January with a half dozen touring cars and Boston chauffeurs, for the purpose of establishing an automobile transportation system.

A. A. A. Perfecting Touring Information Bureau.

The creation of a Routes and Maps Committee, with Asa Goddard, of Worcester, as chairman, was decided upon by the Board of Directors of the American Automobile Association at the November meeting. This committee will be considered a subdivision of the National Touring Committee, and a systematic plan for perfecting and revising the information concerning the main routes of automobile travel, with official hotel and garage appointments, will be put into operation immediately. Mr. Goddard will tour in various parts of the country, and the first routes to be surveyed will be in New England territory. It is the intention of the A. A. A. to perfect its touring bureau so that when the 1906 season begins it will be prepared to supply members with all kinds of definite information.

The board also passed a resolution commending Chairman Morrell and his associates of the racing board for their excellent conduct of the Vanderbilt Cup Race.

The Philadelphia Automobile Association, the Red Devil Automobile Club of St. Louis and the Indianapolis Automobile Racing Association were admitted to membership, in addition to many individuals.

The following resolution was adopted in reference to government aid in the building of roads:

RESOLVED, That the American Automobile Association, through its state organizations, clubs and individual members, shall begin immediately efforts in behalf of the measure known as the Brownlow-Latimer Bill, which aims to create in the Department of Agriculture a bureau to be known as the Bureau of Public Roads and to provide for a system of national, state and local co-operation in the permanent improvement of the public highways. Furthermore, this association believes that the country is now ready to demand national aid in the construction of public highways, and, in consequence, all road users should unite in a unanimous call for an early consummation of that which meets popular approval.

DANGER SIGNS READY.

Syracuse Club Receives Samples of Road Warnings to Be Erected.

Special Correspondence.

SYRACUSE, Nov. 11.—The A. C. of Syracuse has received the first samples of the road signs which it will erect generously throughout this section in time for the first automobiling of next season. The automobile clubs of the state generally have undertaken to put up similar danger signs to warn drivers of dangerous hills and obstacles along the highways.

The signs are large and substantial, being of sheet steel and enamel. "Danger—erected by the Automobile Club of Syracuse" is the inscription which will appear in dark blue letters on a white background. The Syracuse club will erect these wherever needed in this locality before next season. The club will not confine its work to this county, but purposes working north, south, east and west. The routes toward Rochester, Utica, Watertown and other cities will receive attention, those cities meeting the Rochester club halfway.

Particular care will be taken, when erecting these signs, to have them so placed that the lights of automobiles will strike them when they are approached at night. An arrow, painted on the sign, will indicate the direction in which the danger lies.

COLUMBUS CLUB MOVES.

COLUMBUS, OHIO, Nov. 13.—The Columbus Automobile Club dedicated its handsome new quarters, in the large building of the Columbus Savings and Trust Company, with a banquet last night. Almost the entire membership was present, and there were many out-of-town guests, Cleveland and Buffalo being among the cities represented. The affair was a distinct success. Many new members were admitted. The club is very comfortable in its new home, which is in the central part of the business section of the city, and is fitted up attractively, no expense having been spared in the furnishing. Dr. C. A. Howell, the efficient secretary, says that the club will start the new year under most promising prospects. The membership is larger than ever and the organization is on a sound financial basis.

The club will hold an automobile show early in the spring, and the interest being taken in the project insures its success.

In their efforts to promote and dignify automobiling the members are succeeding beyond their most sanguine expectations.

SPRINGFIELD CLUB BANQUET.

Legislation and Good Roads the Subjects Discussed at Annual Meeting.

SPRINGFIELD, MASS., Nov. 13.—The annual banquet of the Automobile Club of Springfield was held last Friday evening in the Hotel Worthy, the club headquarters. Dr. H. C. Medcraft presided as toastmaster. Francis Hurtubis, Jr., attorney for the Massachusetts State Automobile Association, and W. L. Dickinson, secretary of the American Road Makers, were the principal speakers.

Attorney Hurtubis told of his work in the interest of automobilists during the last year, most of which was in the line of blocking adverse legislation, and outlined the work of the coming season. He stated that the legislative committees required constant watching and that unfavorable legislation had been averted at the last minute in some cases. One point gained was that automobilists would begin each season with a clean slate in the matter of fines and wtih out regard to those paid the preceding year. Last June the law was passed allowing local speed regulation and giving autoists the right of appeal and hearing.

Attorney Hurtubis has traveled through out the state to these hearings, 90 per cent of which have resulted favorably to automobilists. He has also been able to secure the opening of nearly the whole of the Metropolitan park system to motorists at an eighteen-mile speed limit. Next year he will try to secure the passage of a law making the fines collected payable into a permanent state highway improvement fund instead of to the farmer constables.

Secretary Dickinson told of the growth of the movement for good roads and the growing sentiment in favor of federal aid. A. P. Langtry, of the State Republican Committee, urged the automobilists to take a hand in politics.

Stanford L. Haynes, the newly elected president of the club, urged the work of increasing the club membership and closer organization in the interest of fair legislation.

FARSON PRESIDENT AGAIN.

Succeeds Ira M. Cobe as Head of Chicago Automobile Club.

CHICAGO, Nov. 13.—The annual election of officers of the Chicago Automobile Club was held at the club house on November 9 and the regular ticket was unanimously chosen, no opposition candidate being placed. The following officers were elected: President, John Farson; first vice-president, Allen S. Ray; second vice-president, B. H. Marshall; secretary, S. S. Gorham; treasurer, T. J. Hyman.

The directors chosen were: Ira M. Cobe, Robert Tarrant, Jr., F. C. Donald, N. H. Van Sicklen, Jerome A. Ellis and Charles E. Gregory.

John Farson was in Buffalo on the night the election was held. The retiring president, Ira M. Cobe, was presented with a loving cup by the retiring directors. The club has prospered under his officership; the finances are in excellent condition and the membership has increased nearly 100 during the past year.

The new club house proposition was discussed with interest and it is hoped that a long-time lease may soon be secured from Mrs. Hetty Green. Owing to present conditions it has not been possible to give much attention to the social side of the club, but Mr. Farson and the rest of the newly elected officers intend to give the matter much thought during the coming year.

After the election there was a vaudeville entertainment in the club house, which was attended by upwards of 100 members.

Jesse Lefforge came down Saturday and took us a nice ride in his automobile. Thanks.—Andersonville (Ind.) *Herald.*

Engineering Committee Plans Serious Work.

HARTFORD, CONN., Nov. 13.—The first meeting of the Committee of the Association of Licensed Automobile Manufacturers having in charge engine investigations and tests was held here November 10, at the office of Henry Souther, the consulting engineer of the committee and the one selected to carry out the details of the tests planned by the committee.

The committee is composed of H. P. Maxin, of the Electric Vehicle Company, John Wilkinson, of the Franklin Manufacturing Company, Mr. Huff, of the Packard Motor Car Company, Mr. Coffin, of the Olds Motor Works, and Mr. King, of the Northern Automobile Company. Mr. Coffin is chairman.

All the members of the committee were present, as well as A. L. Riker, of Bridgeport, chairman of the mechanical committee of the association. With the exception of a visit made to the factory of the Electric Vehicle Company, the entire day was spent at Mr. Souther's plant. The men had lunch at the Hartford Club, as guests of Mr. Souther.

The character of the apparatus necessary to be installed was decided upon after a careful canvass of the experience of the members of the committee, and orders were given for its purchase. The installation will comprise a foundation upon which any engine may be set up for testing, an electric generator to be driven by the motor, and electric instruments for measuring output.

Records will be made of fuel consumption, exhaust temperatures, heat lost in water circulation, analyses of gases at both intake and exhaust, and of thermal efficiency. Considerable attention will be given to the investigation of fuels, including alcohol, which is looked upon as a coming fuel when denaturized, colored and poisoned to make it deadly if drunk, so as to avoid the internal revenue and lower its cost.

Experiments as to cylinder shapes and dimensions, valve dimensions, methods of ignition, carbureter design, cooling systems, efficiency of gears, and driving mechanisms will all be studied. The number of problems arising is large, and only the most important can be undertaken at the outset.

Part of the day was given to the discussion of materials—alloy steels, plain steels, copper alloys, aluminum alloys, bearing metals, and, in fact, everything entering into an automobile. The experience of all in connection with these matters is available in consideration of the standards to be adopted. Analyses and tests of foreign materials have been and are being made. The steel makers are co-operating and stand ready to produce anything demanded by the automobile engineers. Steels best adapted for every part for a high-class machine are being thus selected. These investigations and plans should result in high standards of efficiency in American automobiles.

BOSTON SHOW ALLOTMENT

Applications Exceed Space Although There Are 91,000 Square Feet.

BOSTON, Nov. 13.—The first allotment of space for the 1906 show of the Boston Automobile Dealers' Association, which will be held in Mechanics' Building next March, was made last week by the show committee—George H. Lowe, J. A. MacAlman and E. A. Gilmore, assisted by Manager Chester I. Campbell. The committee was in session for about seven hours, trying to decide upon a satisfactory means of taking care of the large number of applications for space. It was found that not only had nearly all the old exhibitors applied, but that there were many new ones, and that practically all of the dealers who showed last year in Symphony Hall were desirous of securing positions in Mechanics' Building. This led the committee to believe that there will be no competing show in Boston next March.

The show will be divided, as usual, into three sections. The automobiles will occupy the main floor and a part of the basement; the auto boats the rest of the basement, with marine motors and boat accessories; and the automobile sundries and accessories department will have the upper floor and the balconies.

The boat show bids fair to be larger and more interesting than it was last March. The boat manufacturers were well satisfied with the results of their first exhibition.

The show will open on Saturday night, March 10, and will continue through the following week. That it will be the largest of the year in the matter of floor area is shown by a comparison with the space in the halls used for automobile shows in other cities. Madison Square Garden has about 46,700 square feet, the Coliseum in Chicago about 48,000 square feet and the Philadelphia hall about 36,000 square feet.

OBITUARY.

Automobilists on both sides of the Atlantic heard with genuine regret the unexpected news of the death of Clarence Gray Dinsmore, who succumbed to an attack of pneumonia on Wednesday morning, November 8, after having been confined to his apartments in the Waldorf-Astoria, New York, for only a few days. Mr. Dinsmore contracted the fatal illness while returning to the hotel after the theatre on the previous Saturday evening, and sank very rapidly. The funeral took place on Friday, November 10, from the Church of the Holy Communion, New York, and the body was placed in the family mausoleum at Hyde Park, on the Hudson; the burial services were conducted by Rev. Dr. Henry Motett, who, twenty-five years ago, married Mr. and Mrs. Dinsmore. The flags of the Union Club and the Brook Club were placed at half-mast as a token of respect. The deceased was fifty-eight years of age in August last. He leaves no children; Mr. Dinsmore made his home in Paris for many years past, the family residence being located in the Avenue Marceau. Mrs. Dinsmore will soon sail for Paris.

From the earliest days of automobiling Mr. Dinsmore had taken the greatest interest in the development of motor vehicles. He was one of the first Americans to own an automobile; was one of the charter members of the Automobile Club of America; has been the foreign representative of the club ever since its organization in 1899; was at one time its third vice-president, and also

CLARENCE GRAY DINSMORE IN CHARACTERISTIC ATTITUDE.

held the chairmanship of the committee on foreign relations; and he was a member of the automobile clubs of France and Germany. He was always a champion of automobile speed contests, and his own favorite Mercedes cars were entered in many famous races in Europe, as well as in the first Vanderbilt cup race in America; his racing car was also entered for the second Vanderbilt cup race, but could not be prepared in time to compete.

Mr. Dinsmore was six feet four inches in his shoes, and possessed a naturally strong constitution, and in his youth distinguished himself in athletic sports. A spinal injury, from which he never entirely recovered, barred him from athletics and caused him almost continuous suffering, from which he found temporary relief in automobiling.

News and Trade Miscellany.

A new concern has been incorporated in Utica, N. Y., under the name of the Consolidated Motor Car Company of Utica, with a capital stock of $50,000, to deal in automobiles, parts and supplies and carry on a garage and automobile livery business. The new corporation has taken over the business of the Miller-Mundy Motor Car Company and the Utica Motor Company and plans are being prepared for a building which will be used as a garage, salesroom and repair shop. Arrangements have been made to handle the Cadillac, Pope-Toledo, Pope-Waverly, Winton, Pierce, Stevens-Duryea and other cars. The directors are Francis P. Miller, Harry H. Mundy, George H. Norris, C. Harrison Norris, Edward J. Otis, Arthur B. Maynard and T. Harvey Ferriss. The officers are: President, Francis P. Miller; vice-president, Edward J. Otis; secretary, H. H. Mundy; treasurer, C. Harrison Norris.

Plans have been completed and a company formed for the establishment of an automobile sales and garage business in Newark, N. J., and contracts have been let for the immediate construction of a large and fully-equipped building at 90 Washington street. The company is the Greene Motor Car Co., with temporary offices at 776 Broad street, Newark. Arrangements have been made for the northern New Jersey representation of the Locomobile Company of America, Smith & Mabley (Mercedes, Panhard and Renault cars) and the Oldsmobile cars will be handled in a large territory. The garage and repair shop will be fully equipped for automobile work, and it is believed that owners of cars will find it more convenient to keep their machines in a first-class garage near at hand than to send them to New York. The president of the company, R. A. Greene, has been for several years, and still is, connected with the Locomobile company, and for six years has been in the automobile business in New York. W. L. Clark, of Passaic, is vice-president and the company's attorney. E. A. Greene, of Passaic, is treasurer; W. C. Overman, of East Orange, well known from his connection with the Overman Wheel Company, is secretary and manager; and Clifton D. Baldwin will have principal charge of the sales accounts.

There will be a number of new retail and manufacturing concerns in Cleveland when the new season opens. There have been many new incorporations of late. Among the new companies are the Ohio Garage & Repair Company, capital stock $10,000, formed by G. W. Hale, I. D. Hogg, E. T. Gibbons, G. W. Hale, J. O. Lundy, H. D. Merrick; the Motor Car Supply Co., capital stock $10,000, formed by L. H. Drown, W. B. Drown, E. C. Lessner, A. R. Graves and E. G. Guthery; the Standard Automobile Company, capital, $1,000, incorporated by George H. Smith, F. B. Williams, George H. Kelley and M. G. McAlleman; and the Paxon Motor Car Company, capital stock $10,000, formed by C. D. Paxson, A. D. Paxson, Robert Dash, C. B. Solders and Otto Leisy.

The city of Kalamazoo, Mich., has been made defendant in a suit for $10,000 damages, brought by Harry K. Landis, of Indianapolis, Ind., as the result of an automobile accident on August 6. The accident happened in the evening of that day, when George Merrifield, of this city, hired an automobile and invited J. W. Johnson and Landis to ride with him. The machine was in charge of a regular driver and was bound east on Lincoln avenue, when it struck a washout in the street, according to the claims of the plaintiff, and all the occupants were thrown out. Landis alleges that he suffered two broken ribs, besides serious bruises. He claims that the city had neglected to repair the street.

The first car built for the market by the American Motor Car Company, of Indianapolis, is just nearing completion. Details concerning the construction of the car have not yet been given out, but it is understood that it will be a four-cylinder, 30-horsepower car with shaft drive. A Continental engine will be used and the car will sell at about $3,000.

D. B. Huss, John L. Poole and J. Amrant have gone to Europe to take care of the interests of the Olds Motor Works at the automobile shows to be held at London, Paris, Berlin and Alexandria.

The Elston Automobile Company, of Indianapolis, is at work on the parts for a racing car to be built for S. W. Elston, who has announced that he will re-enter the racing field next year, after an absence of two seasons. The car, according to Mr. Elston, will be of 100 horsepower with a six-cylinder engine and shaft drive. It is expected that the car will be completed this winter.

As a sample of many letters that his firm is receiving from all over the country, but particularly from New York city, Walter C. Watson, head of a card clothing manufacturing company in Leicester, Mass., exhibits a letter he received last week from Beebe Webber & Co., of Holyoke, Mass. In this they stated that a large order they had placed elsewhere would have been given to the Leicester firm but for the attitude of the town authorities toward automobilists. The jobbers and dealers are said to be hurting the business of the Leicester firm to a great extent. Mr. Watson has appealed to the town authorities, but the chairman of the Board of Selectmen treats the whole matter as a joke.

Windsor T. White, of the White Sewing Machine Company, last week concluded a tour of inspection of the various Eastern branch houses and agencies for White autos by a visit to the Philadelphia store. Saturday he left for his home in Cleveland, after witnessing the Harvard-Pennsylvania football game.

The Capitol Foundry Company, manufacturers of automobile, marine and stationary engine castings, has established its plant at Hartford, Conn., and will be under the personal supervision of F. W. Stickle, president and general manager of the company, who was formerly superintendent of the Manufacturers' Foundry Company of Waterbury, Conn.

R. A. Whitney, who has been filling the position of general salesman for the Bartholomew Company, manufacturers of the Glide automobiles, has been appointed sales manager for the company.

In our issue of November 9 the Northern agency in Chicago was reported as having been secured by "Kelly, Hunt & Co." The name of the concern that will handle this car is the Kelley-Hunter Company, which, after February 1, 1906, will be established in the quarters at present occupied by the McDuffee Automobile Company.

R. M. Owen, sales manager for the Reo Motor Car Company, has returned to New York from a week's visit to the factory at Lansing and other western points.

Efforts are being made to organize a company in New Haven, Conn., with $50,000 capital, to manufacture automobiles fitted with a new engine designed by F. C. Billings, of the firm of Billings & Spencer. The new concern desires to locate in New Haven to take advantage of the carriage wood working factories, some of which are now kept busy making bodies for automobiles manufactured in Hartford.

The Pardee-Ullmann Company has been selected by the H. H. Franklin Manufacturing Company to act as Chicago agent for the Franklin cars. This company also handles the Packard car.

The exclusive Indianapolis agency for 1906 for the Reo car has been placed with the Gibson-Short Cycle and Automobile Company of that city. The company until recently had the agency for the Premier and Ford cars.

The Olds Motor Works, of Lansing, Mich., will entertain about 100 of its agents at a convention to be held at the factory November 17 and 18. The meeting is arranged primarily to have the agents become familiar with the 1906 models and to visit the consolidated plant for the first time. A banquet will be served in one of the shops, and some form of entertainment other than the demonstration of the new cars will be provided.

Mayor Todd, of Jackson, Mich., is looking for a good roads convention and has already interested many citizens in the cause. The mayor wants to have such a convention held in Jackson next January while the Board of Supervisors is in session. As the supervisors from the various townships are interesting their constituents in the project, it is expected that a large mass meeting will result.

In the "Information for Buyers" department of THE AUTOMOBILE of October 26 the impression was given, in referring to the Norton crankshaft grinding machine, manufactured by the Norton Grinding Co., of Worcester, Mass., that the machine was without gears. This is, of course, erroneous, as the machine has many gears; the manufacturers state that grinding crankshafts is accomplished without the use "of gears or traps *on* the machine."

The Dolson Automobile Company of Charlotte, Mich., has been incorporated, with a capital of $100,000 taking over the business of John L. Dolson & Sons. John L. Dolson is president of the company, D. Elmore Dolson, secretary and W. E. Dolson treasurer. The carriage business has been closed out, and hereafter automobiles only will be made.

The Model Gas Engine Works of Auburn, Ind., will remove next spring to Peru, Ind., at which place work has already been commenced on the buildings to be occupied by the company.

Mohler & DeGress, of Long Island City, N. Y., manufacturers of gasoline and gas engines, announce the sale of their plant to F. A. Seitz, who will carry on the business under the old name.

The Panhard & Levassor Automobile Company has leased the new four-story garage at the northwest corner of Sixty-second street and Broadway, New York, and expects to take possession of the premises about February 1, 1906. The company will not vacate the building which it now occupies on West Thirteenth street, but which has for some time been too limited in size.

The Kane-Champlin Company of Buffalo, N. Y., has closed with the Reo company for the exclusive representation of Reo cars in Buffalo and vicinity. It has placed its order for 150 cars and will occupy garage and display rooms at the corner of Elliott and Tupper streets.

INFORMATION FOR BUYERS.

SPEED AND DISTANCE.—An instrument for simultaneously indicating speed, distance and time on different parts of a single dial is manufactured by the Motor Car Specialty Co., of Trenton, N. J., and is called the Lea "Speedistimeter." The instrument is 4 1-2 inches in diameter and is fitted with a flanged base, so that it can be attached to the dashboard or other part of the car, with the dial at an angle with the base, so that it can be easily seen and read by the driver. Drive is by a flexible shaft passing through the floor of the car and gear driven from one of the front wheels of the car. The pinion on the shaft is fitted with ball bearings, and a distance rod, with ball and socket joints, maintains the proper distance between the shaft and the larger gear which is attached to the hub of the road wheel by a special bracket provided for the purpose. Small oil cups are fitted to give the driving mechanism the necessary lubrication. The manufacturers state that the speed recording mechanism is built on the principle of the German tachometer and has hardened

LEA SPEEDISTIMETER.

steel wearing parts, main spindle running in ball bearings and every part rigidly supported. No worm gears are used. The clock movement is the well-known Chelsea make; the total odometer reads in miles and tenths up to ten thousand miles; the trip odometer reads to ninety-nine miles and is returned to zero by a knob at the bottom of the case; the speed indicator is graduated to read to fifty miles an hour or one hundred miles an hour, as the purchaser may wish. The manufacturers are preparing an instrument similar to the one described but without the clock movement.

AUTOMOBILE SPECIALTIES.—A neat and attractive little catalogue of a few special automobile accessories has been issued by Jacobs & King, 46 Columbus avenue, Boston, Mass. The little book is devoted to the Kilgore air cushion shock absorber, consisting of an air cylinder and plunger so fitted that shocks due to rough roads are taken on a cushion of compressed air; the Lea "Speedistimeter," a combined clock, trip and total odometer and speed indicator; the Lea tire pump, a double-opposed cylinder pump worked by a crank handle of adjustable length; and the "Breech-block" spark plug, a plug that requires but one-sixth of a turn to remove or replace it and which is made also with a view to quick and easy cleaning.

CLEAN GOGGLE LENSES.—The mist that forms on the lenses of the automobilists' goggles at times is very annoying, if not positively dangerous, and for this reason there should be a market for a new lens polish recently brought out, the object of which is to polish the glass and at the same time prevent the formation of the troublesome film of moisture. The substance is called Non-steam lens polish, and is manufactured by the Non-steam Chemical Company, Station B, Toledo, O. The manufacturers state that a little of their preparation rubbed on the lenses according to the directions given will prevent the formation of the film for twenty-four hours. The material does not dim the glasses, but polishes them.

NEW VOLT-AMMETER.—The desirability of having a current-measuring instrument at once reliable and quick in action for testing ignition batteries has caused the Atwater Kent Manufacturing Works, of 112 North Sixth street, Philadelphia, Pa., to bring out a volt-ammeter which is so made that the needle is brought to rest very quickly when a current is passed through the coils—that is, the needle does not vibrate and swing

ATWATER KENT VOLT-AMMETER.

back and forth for a long time before stopping at the correct figure on the dial. An instrument built on the same principle, but reading in volts only, is also manufactured. A hand-sewed leather case is furnished with each instrument. These instruments are made with various capacities, to suit various classes of service.

ROLLER BEARINGS.—A large and complete catalogue of roller and ball bearings of various kinds and complete axles for automobiles mounted on roller and ball bearings has been issued by the Standard Roller Bearing Company, of Forty-eighth and Girard avenue, Philadelphia. The catalogue is of the plain, straightforward business type, giving much useful data concerning bearings. Roller bearings for all kinds of service are listed, including special bearings for special purposes; also complete automobile rear axles fitted throughout with roller bearings, with bevel gear drive, single chain drive and with double chain drive and front axles. Ball bearings are also catalogued for the same work, there being as full a line of these as of the rollers. The man who uses bearings, no matter what his requirements may be, is pretty sure to find what he wants in this catalogue.

TRADE LITERATURE.

CODMAN & SHURTLEFF, 15 Tremont street, Boston, Mass.—Circular illustrating and describing tire pumps and oil guns.

H. F. BORBEIN & Co., St. Louis, Mo.—Circulars illustrating running gears, bodies, steering gears, knuckles, roller bearings and other automobile parts. This concern makes parts for cars of all kinds.

THE AUTOCOIL Co., Jersey City, N. J.—Blotter, on the back of which are illustrations of a number of the coils made by this concern for ignition work; also illustrations of various forms of vibrators, all of which can be used on the autocoils.

SCHUG ELECTRICAL MANUFACTURING Co., Detroit, Mich.—Advance circulars illustrating a variety of spark coils in single, double and triple styles; wiring diagrams are also given, as well as some useful information on the care of coils in general.

EDMUNDS & JONES MANUFACTURING Co., Detroit, Mich.—Catalogue of automobile lamps, including searchlights, side lamps and tail lamps, the searchlights for acetylene and the smaller sizes for oil burning; also acetylene generators.

WM. C. ROBINSON & SON Co., Baltimore, Md.—Circular regarding a line of lubricating oils made for all classes of work; a special line is manufactured for automobile use. These oils are called the Autoline oils. A special grease is also made for use in gear cases, grease cups and the like.

F. S. CARR, 74 Pearl street, Boston, Mass.—Circular regarding a new rubber substitute of vegetable and mineral origin, which the manufacturer states can be vulcanized and "indurated" the same as pure rubber. The substance is called "Kokuk" and is made especially for the treatment of material used in manufacturing automobile tops and the like.

NEUSTADT AUTOMOBILE & SUPPLY Co., St. Louis, Mo.—Advance circulars illustrating commercial vehicles of various types, for which this concern makes parts for assembling. The styles include covered delivery wagons; platform trucks with open sides, stakes or bars; express wagons, open or with tops; passenger wagonette and other types. Though handling all parts for such machines, this concern does not sell complete cars.

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